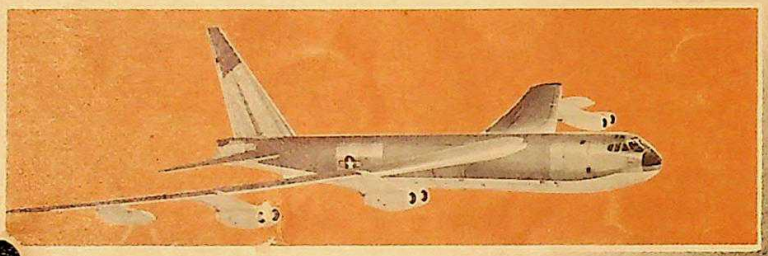
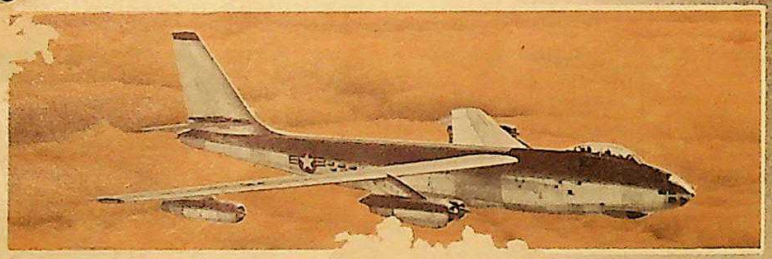
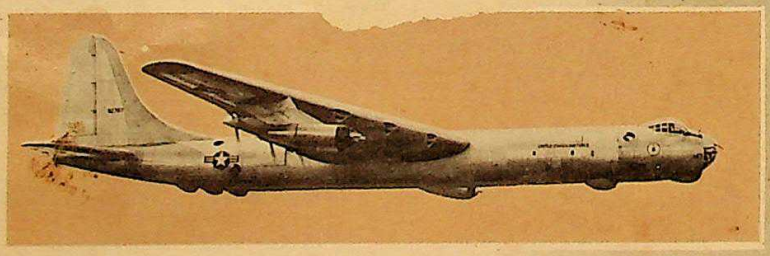
strategic air command

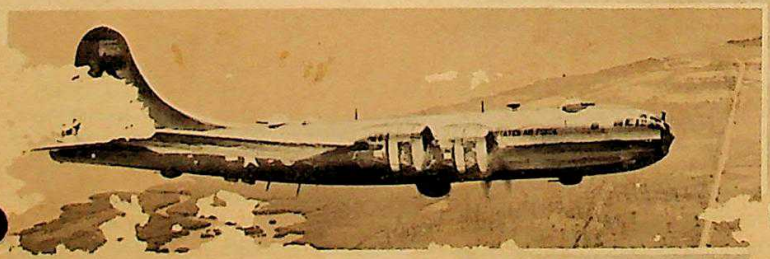
Combat Crew

SAC's 12th Anniversary









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March 1958

Combat Crew

March 1958 Volume VIII, Number 9

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STRATEGIC AIR COMMAND
Gen. Thomas S. Power
Commander in Chief

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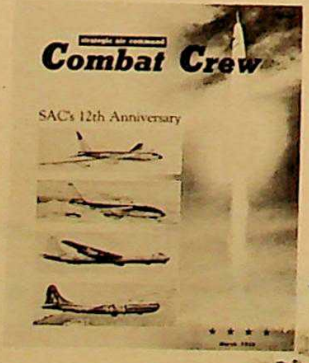


the cover

March marks the 12th anniversary of the Strategic Air Command. In honor of this occasion, Combat Crew has printed its first missile cover. It depicts the progress of SAC from the B-29 to the B-52 and weapons of the near future. Our apologies to SAC men who flew the B-50 and other important stepping stones, but our limited space would not accommodate them all.

Accident? or Design?

MAJ. GEN. WALTER C. SWEENEY, JR.
Commander
Eighth Air Force

A graduate of the U.S. Military Academy in 1930, General Sweeney has been commander of the Eighth Air Force since August 1955. Prior to that he commanded the Fifteenth Air Force for more than two years. During World War II he had extensive operational experience over Japan, the Mariana Islands, and Iwo Jima. General Sweeney's background also includes duty as executive officer in the office of the Assistant Secretary of the Air Force, as instructor of strategic operations, National War College, and a tour as the SAC Director of Plans. His awards include the Distinguished Service Cross, Silver Star, Distinguished Flying Cross and the Legion of Merit.

DURING THE COURSE of reviewing aircraft accidents, one fact is painfully clear—most of the primary factors in SAC aircraft accidents are those over which we have full control. Short of achieving complete perfection in the design of our aircraft, there will always be an accident potential in flying. However, this potential accounts for only a fraction of the accidents which continue to occur. The great majority are preventable.

The causes are rooted in failures and shortcomings of our people. Involved are proficiency and judgment of aircrews, performance of maintenance personnel, and the watchfulness and awareness of supervisors.

Years ago, before aircraft accident investigations evolved into the exhaustive, analytical procedures of today, many mishaps were written off as cause unknown, or were dismissed as the natural consequences of a hazardous operation. We are now able, in most cases, to identify the primary and contributing causes of accidents. This has enabled us to build an effective prevention program—one which has produced a sharp decrease in accidents. At the same time this knowledge has shocked us by revealing repeated instances wherein failures and inadequacies over which we have complete control are the primary factors.

Analysis after the fact reveals that many of these accidents were not only preventable, they were predictable. They were made possible through the combined failures of so many people that the ultimate accident was almost inevitable. The tragedy is, that after the fact analysis showed us our mistakes and errors rather than before the fact recognition that an accident was in the making, thereby providing an opportunity for timely preventive action.

What are some of these failures over which we have control? A prominent one is the careless disregard accorded written directives. Nearly all of our major accidents contain examples which emphasize this point. Regulations and directives in the field of safety are the result of painstaking research and experience, motivated in large measure by our study of actual accidents or near accidents. To ignore them in our flying operations is to flirt with the short odds of fate.

Another outstanding source of accident potential lies in the failure of supervisory personnel to fully discharge their supervisory responsibilities. Our accident files contain clear instances in which flight chiefs, maintenance officers, operations officers, instructor pilots, commanders, and other supervisors have condoned gross errors of judgment and performance in individuals for whom they were directly responsible. It is mandatory that our designated leaders fulfill their responsibilities with full knowledge of the impact their supervision can have on the safe and successful accomplishment of the flying mission.

A third prominent cause of many accidents is the occasional—but fatal—disregard of vigilance and professionalism in flying activities. Overconfidence, complacency, negligence, and inattention have cost us more skilled aircrew personnel than materiel failure and enemy action combined. There is no room in this business for the amateur or the semi-pro. And even our top-notch performers must be carefully and continually supervised.

Accidents of these types—the failures and shortcomings of our people—are not only preventable and predictable, they are indefensible. They cannot be explained to higher headquarters, to the public, or to our own people. These are the accident candidates for complete elimination. They can and must be prevented by the daily routine of thorough checking, monitoring and supervising which detects and corrects the flaw before it becomes disaster.

A supervisor is either a manager — or a mismanager

"... Through constant supervision we can ferret out the accident cause factors of the past and eliminate them in the future ... I charge every member of the command with the responsibility of further conserving our resources through efficiency and management in the ensuing year." — General Thomas S. Power

MISMANA

By COL. JAMES H. THOMPSON
Director of Operations, Second Air Force

THERE ARE FEW, if any, organizations which could not be improved by the application of sound management principles. We are doing pretty well with management, but we are only getting about 60 per cent value from our efforts.

All of the accidents depicted on these pages were attributed to operator error. Would application of good management have done anything to prevent them? Is there any relationship between aircraft accidents and mismanagement?

The principles of management apply to any situation involving more than one man where some degree of command is involved—whether it be command of a wing or the duties of a crew chief.

You have probably heard of the four principles of good management many times before, but here they are again—if just for review:

UNITY OF COMMAND: Only one boss.

SPAN OF CONTROL: The right number, distance, and time.

HOMOGENEOUS ASSIGNMENT: Functions must be specific, not overlap, be assigned to one person, and be within the capabilities of the individual.

DELEGATION OF AUTHORITY: Must accompany delegation of responsibility. Must be limited at the operating level.

These principles of organization are based on actual human behavior in group working relations since primitive times. They are not rules or bits of policy developed by individuals. They are as immutable as the principles of science, such as the laws of physics, and cannot be changed to fit individual or local conditions. You can use these principles and have an efficient organization or you can ignore them and court disaster, but you can't change them!

In managing any activity the supervisor performs five functions:

PLANNING: He plans activities of subordinate groups.

ORGANIZING: He issues necessary orders.

CONTROLLING: He maintains controls.

CO-ORDINATING: He co-ordinates activities.

MISMANAGEMENT
MISMANAGEMENT

THE STRUCTURAL LIMITS of an aircraft were exceeded. Were the principles of management which led to this disaster also violated somewhere in the training of the pilot?

MISMANAGEMENT
MISMANAGEMENT

GEMENT

These functions of management apply to any echelon of command, and when properly understood and executed they make collective group effort possible.

While on a routine two-hour test flight recently, a B-47 experienced materiel failure in the forward main gear mechanism which prevented its extension. Had some fundamental of management been violated in the manufacture of this component? Were proper standards set up and was the unit checked against these standards when it was assembled?

A serious accident was averted by the existence of sound management in the operational units concerned. The value of local planning was evidenced in that tankers were readily available to refuel the B-47, which allowed time for emergency procedures to be attempted. Supervisory control of the situation was maintained at all times. Key personnel at all echelons of command, as well as manufacturer personnel, were called into a telephone conference in a concerted effort to determine the best course of action.

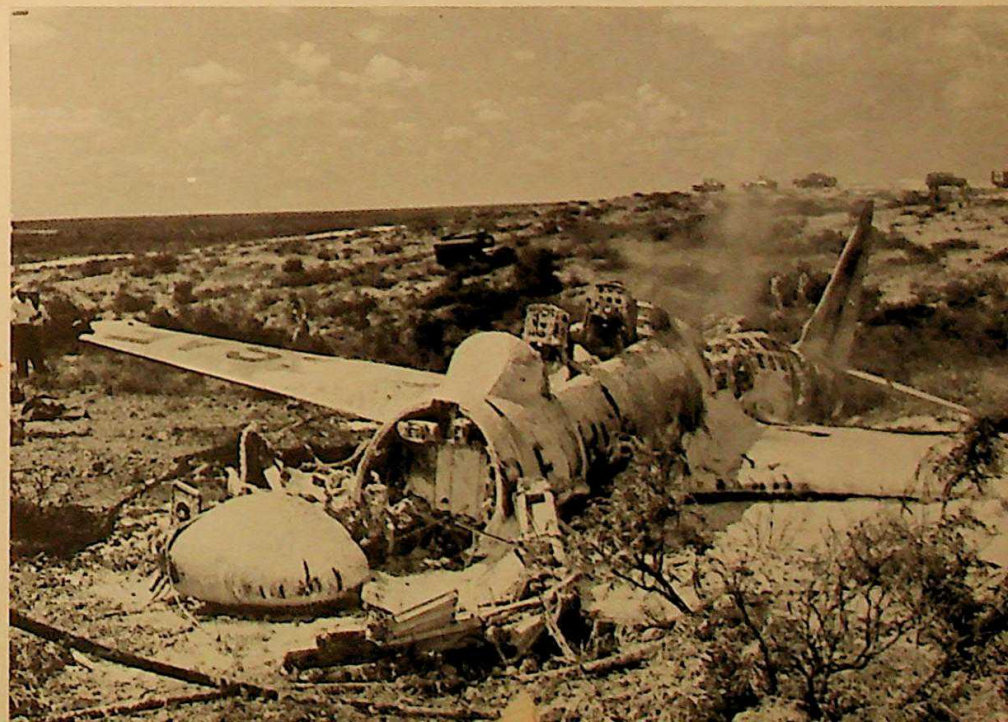
Although a materiel failure existed, the airplane was landed wheels-up on a strip of foam with no serious damage. This offers conclusive proof that commanders and supervisors, as well as the aircrew concerned, had used the concepts of good management in every phase of their training and operation.

It is unfortunate that this was not true in the

MISMANAGEMENT
MISMANAGEMENT

A CHECKLIST was not used by either pilot during a go-around, which resulted in fuel starvation. The IP lost control of the situation by not checking the performance of the student. Poor management!

MISMANAGEMENT
MISMANAGEMENT



case of a recent KC-97 accident: the aircraft crashed short of the airfield, out of fuel. Among the many aspects of this accident, it is apparent that supervision and control prior to the accident were not fully utilized.

The process of supervision is a control function of management and is one of the major determinants of the success or failure of an endeavor. Standards of performance must first be established and then, through constant supervision, procedures and results must be checked against the standards.

Any deviation from the standards, no matter how minor, should be noted and prompt corrective action taken.

Analysis of operator error accidents will often show that they were caused by a lack of knowledge or a violation of a Standing Operating Procedure. This indicates a deficiency in the control function since supervisors either did not recognize the substandard performance of the individual or did not take the necessary corrective action to train out the deficiency.

Deviations Costly

Standards of performance in the form of SOPs, checklists, and inspection guides were developed after extensive research, years of experience, and coordination between highly qualified personnel. Each accident or near accident added to the knowledge of how and when any procedure could be most safely accomplished. Knowledge gained in this manner is extremely costly and variations from the standard procedure as a personal experiment cannot be afforded.

No one individual has the mental capacity and the necessary experience level to allow him to depart from the standard procedure and be able to predict the consequences under all conditions. The fact that many variations in procedures or sequence will produce similar results under normal conditions is an insidious trap which has snared many highly qualified personnel. In the

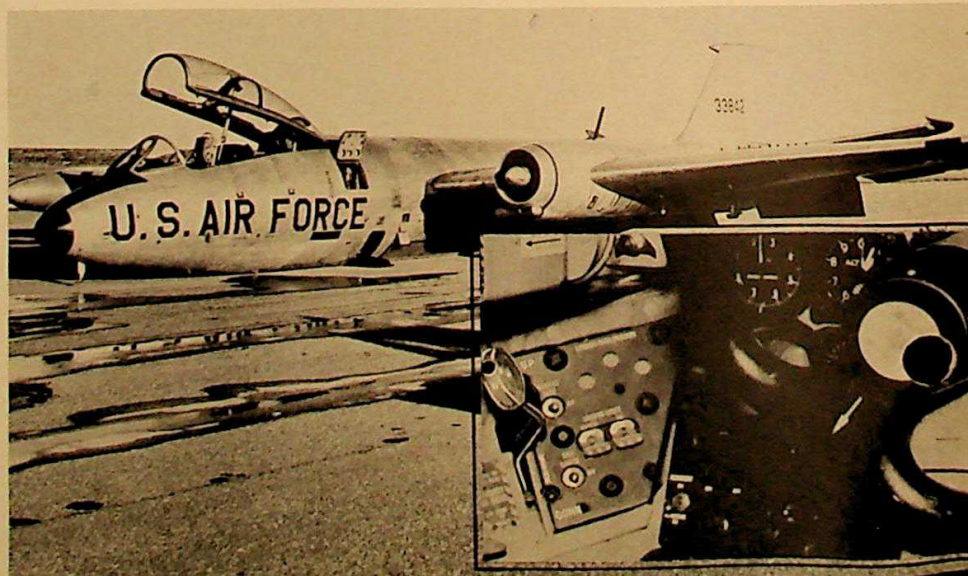
REFUSING TAKEOFF too late and a jettisoned brake chute caused this overrun. Were the principles of management observed during the planning of this takeoff?

stress of an unusual situation, such as an emergency, these nonstandard procedures are found to be inadequate and an accident occurs.

Poor management in maintenance fields can have as serious a consequence as in the operations field. Even if an accident does not occur, many missions are canceled or delayed because of failure of one of the functions of management through violation of one of the four basic principles.

With the decreasing experience level in the maintenance field, duties imposed on an individual could very easily exceed his capabilities. This results in hasty, inadequate, or omitted maintenance or inspection of the aircraft.

Aircrew preflights of an aircraft were designed under the assumption that all required maintenance inspections were properly performed. The overlap of functions was eliminated except for the most critical items. This small overlap has given rise to the comment "These aircraft are being worn out by being inspected so often." In rebuttal it may be shown that a recent B-52 accident originated with the reversal of electrical wiring on the stabilizer trim by maintenance or



GEAR-UP LANDINGS happened no less than 50 times during 1957. Could more effective management eliminate this type of error?

manufacturing personnel. This deficiency escaped the attention of all inspectors and also the flight crew, resulting in the loss of the aircraft and crew. Control of activities can never be relaxed with safety.

The commander of an organization has several direct and indirect methods of exercising control of the functions within his jurisdiction. Inspectors, staff and supervisory personnel, in addition to personal observation, provide him with basic supervisory control which is limited only by the ability and intergrity of the individuals concerned.

The standardization program offers the commander and operations supervisors a continuing "quality control" of aircrew proficiency. Areas of weakness are outlined in detail to allow specific corrective action to be taken.

Whenever a deficiency in knowledge or a variation in SOP is observed, prompt, clearly defined action must be taken to correct the discrepancy. Promptness of action cannot be over-emphasized. With aircrew personnel, corrective action should be taken before the next flight.

The reduction of operator-error type of aircraft accidents, through the resolute application of good management principles and procedures, will be a major contribution to the safe operation of SAC aircraft in the future.

Commanders must provide the necessary leadership to establish and maintain sound management procedures within their organizations. The integrity of subordinates must be such that dynamic interest is aroused in developing their own management capability.

As a group the Air Force is capable of reaching unprecedented heights of effectiveness if each action is calculated to comply with the basic principles of management.

What is your status as a supervisor? Are you a manager or a mismanager?

About the Author

Colonel James H. Thompson has been the Second Air Force Director of Operations since March 1955. Prior to this assignment he was in command and operation fields in B-47, B-36, B-50, and B-29 organizations. During World War II he saw duty in B-29 operations in the Pacific theater. Colonel Thompson is a command pilot, having completed pilot training in 1940, and has been in the bomber program throughout his career.

Abort Without Question

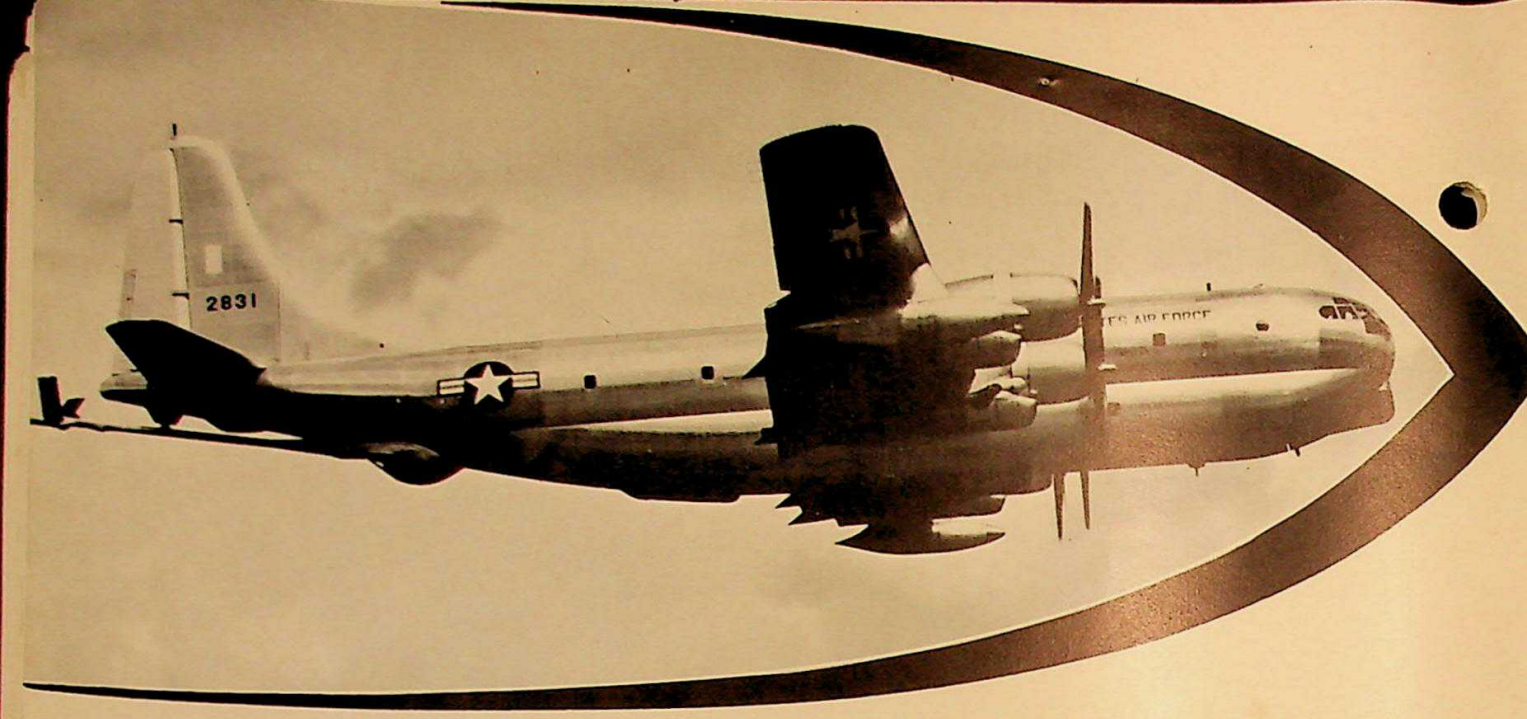
A TOWER OFFICER, an aircraft crew, and an alert fire unit demonstrated a chain of split-second reactions to save a B-47 from destruction by fire and the probable death of the homebound AC and crew.

The incident happened on redeployment from Guam. The plane had traveled about 2500 feet down the runway on takeoff when tower observers saw the left main tire or wheel separate from the aircraft and vapor spurt from the left external fuel tank. The only indication of trouble the aircraft commander had was a slight explosion in the fuselage which he felt or heard.

The tower officer, through the senior tower operator, immediately advised the AC to abort and alerted crash crews. The AC promptly started his abort procedures without question. As the aircraft decelerated, the crew, seeing fuel gushing from the left external tank, instantly shut down the three engines on that side to prevent fire. The B-47 was halted safely on the runway. A fire-fighting unit was in place almost as soon as the aircraft stopped rolling and sprayed the fuel with foam.

Inspection showed that the left aft main wheel had broken, causing the retaining flange to separate intact from the rest of the wheel body, which allowed the tire to be thrown off. A fragment of the wheel was hurled against the fuel tank tearing a jagged hole near the aft inboard end of the tank below the horizontal centerline.

Had it not been for an alert tower officer who knew his responsibilities, a quick-thinking crew, and a crash crew that reacted promptly in an emergency, the Air Force would have lost a B-47 and quite possibly a crew.



By CAPT. JAMES L. SHARPLEY
4050th ARefW, Westover AFB

WE HAD BEEN ordered to rendezvous in the vicinity of Harrisburg, Pa., with two B-47s for a night air refueling. It was just another routine training mission and an instructor crew and student crew were aboard. Preflight and departure from Westover was without incident and all operations were normal until departing the orbit point at 15,000 feet.

Shortly after leaving Harrisburg at 1945 EST formating speed was requested. As the engineer advanced the master propeller synchronization lever to 2550 rpm and was advancing the throttles through 42 inches mp, all four propellers began to increase rpm. Number two, three, and four propellers went to approximately 2650 and then started to drop back to 2520. The instructor engineer, M/Sgt. James H. Smith, reported that No. 1 was overspeeding.

Crew Alerted

Action was taken immediately to retard throttle and feather No. 1; fuel cutoff was called for. Definite feathering action took place and rpm dropped from 3300 to 2600. Power was reduced on No. 2, 3, and 4 engines and flaps were extended to 55 per cent to slow airspeed from 190 knots to 130 knots. After No. 1 propeller stabilized at 2600 rpm for a few minutes it quickly started to rise again. I again attempted to feather the stubborn No. 1, but still without success. I then called for fuel dump and alerted the crew for possible bailout.

With No. 1 overspeeding at 3800 rpm and airspeed reducing through 155 knots, the instructor boom operator, M/Sgt. Joe B. Ward, reported heavy white smoke coming from the exhaust and light smoke coming from the cowling on No. 1 engine. I called for gang-bar of the engine and discharge of CO_2 first fire. Flaps were retracted and dumping of JP-4 discontinued. Shortly after the CO_2 was discharged the scanner reported that the fire appeared to be out and that smoke was no longer visible from No. 1 engine. I then ordered dumping be resumed, extended flaps to 15 per cent and reduced airspeed to 130 knots.

As airspeed was reduced rpm on No. 1 propeller dropped from 3800 to approximately 2850. I told the engineer to open the oil shutoff valve on No. 1 engine hoping to windmill the propeller and engine until a safe landing could be made. Soon after the overspeed started the engineer had positioned the propeller oil replenish switch ON (although we had no propeller light) and manually attempted to toggle No. 1 propeller down. The low limit light came on but there was no rpm reduction noted. The propeller feathering current limiter was also checked and found to be good. The instructor navigator, Lt. Richard L. Guerraro, reported that Wilkes-Barre, with a 5100-foot runway, was the nearest landing field. Due to a rapid drop in terrain at both ends of the runway at Wilkes-Barre I decided against a landing there and requested something with at least 6000 feet and stressed for our weight. The navigator advised that Stewart AFB with 6000 feet, or something in the New York City area, was our best bet. I requested heading for Stewart 100 NM east. Then I turned IFF to squawk emergency, contacted a GCI station, and advised of existing emergencies. I asked that GCI contact Air Route Traffic Control and obtain clearance from our present position to Stewart, descending from 12,500 to 5000 feet as we had an undercast to descend through. I also asked that they give us flight following into Stewart and the best bailout heading in the event we had to leave the aircraft.

incident over wilkes-barre

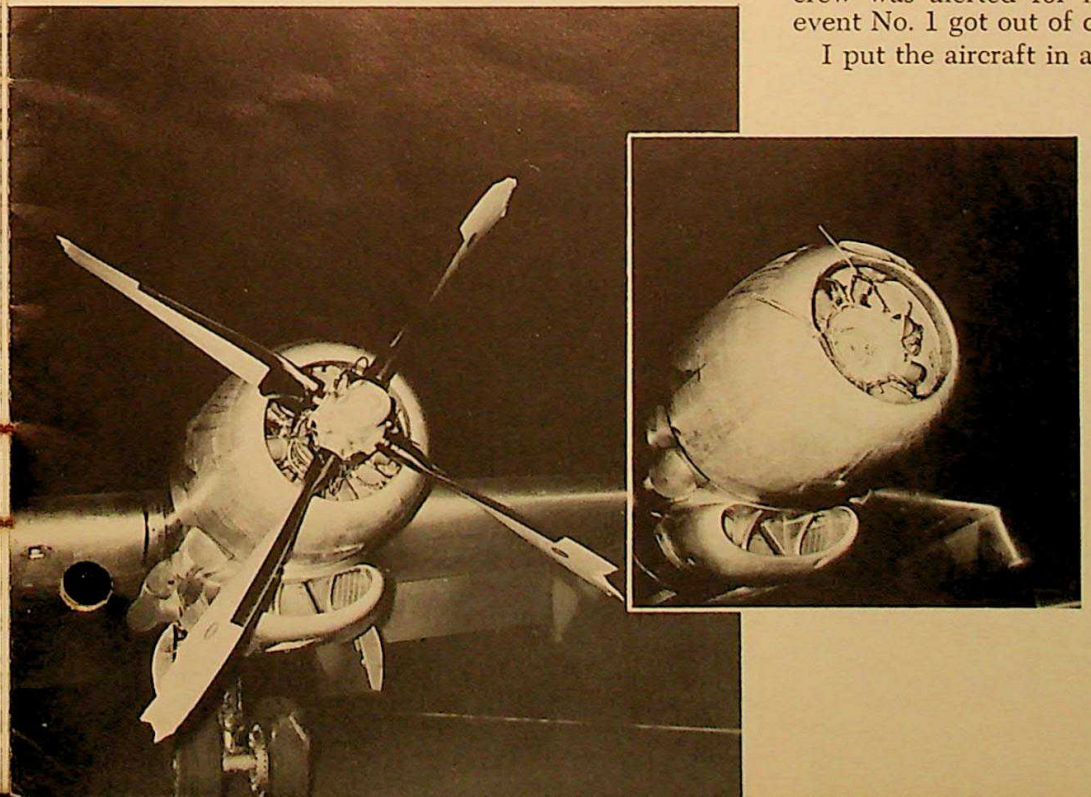
"I would have given odds this bird was going to be on its own very shortly"

Knowing that there was a strong possibility that we would lose the runaway propeller, I had instructed the engineer to gang-bar the adjacent engine at first indication No. 1 propeller was separating from the engine. Approximately four minutes after the first fire was extinguished, the engine seized violently and we estimated that the rpm went well above 4000, judging from the high whining noise. The engineer reported that the propeller shaft had sheared. Then the scanner reported orange flame coming from the exhaust and the student aircraft commander reported a bright red glow in the prop dome. I called for reposition CO_2 to second fire and started shutdown procedures on No. 2 engine. It was none too soon. Almost simultaneously No. 1 prop separated from the engine and struck the No. 2 propeller shearing one and a half to three feet off each blade.

Aircraft Dived

The engineer had also gang-barred No. 2 engine and it immediately came into a feather position. During the propeller separation and gang-bar of No. 2 engine, CO_2 number two had been fired to both engines. Immediately after the propeller separated the student aircraft commander reported fire in No. 1 engine, which we determined to be a magnesium fire in the nose section. At this point I would have given odds that this bird was going to be on its own very shortly. The crew was alerted for immediate bailout in the event No. 1 got out of control.

I put the aircraft in a dive attempting to blow



SHUTDOWN PROCEDURES on No. 2 were started none too soon for when No. 1 prop left the engine it sliced several feet off the blades on No. 2.

INCIDENT OVER WILKES-BARRE . . .

the fire out before it could spread aft of the propeller reduction gears and torque ring assembly. As we reached approximately 155 knots the fire appeared to be going out, then flashed up again and quickly died down until no fire was visible. Normal rated power was set up on No. 3 and 4 engines and flight was continued to Stewart. GCI was advised of the time we lost the propeller so that location could be determined.

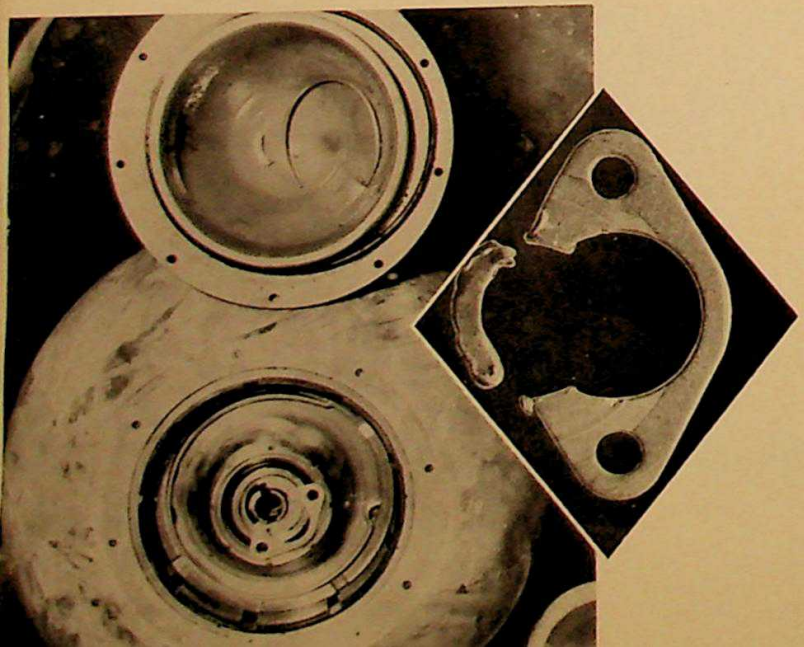
It had been 18 minutes from initial overspeed until the propeller shaft sheared, and five minutes later the prop left the engine.

Enroute to Stewart I changed seats with Colonel Webb so I would have nose wheel steering for landing. Stewart Radar directed us into the pattern. I elected to make a left-hand visual approach, so a descending turn to base and final approach could be made.

Tires Blow Out

We discontinued dumping of 115/145 on downwind leg after 9700 pounds had been released. Gross weight for landing was 105,000 pounds. Trim for reduced power was set up while on final. Final approach speed was 130 knots, with flaps 55 per cent called for four miles out, and gear down when the field was made. As roundout was started, full flaps were requested. Touchdown was made at the end of the runway with flaps approximately 85 per cent. Shortly after touchdown the aircraft started to veer left. Nose wheel steering was ineffective, so full right rudder and right brake were used for directional control. At 1500 feet after touchdown the right outboard tire blew. At 1700 feet the right inboard tire went. The tower advised us that the aircraft was on fire, and the right scanner, A/2c Roland E. Davis, reported fire in the right main gear. The plane continued straight down the runway for approximately 400 feet and then started to veer to the right. Left rudder, left nose wheel steering, and left brake were used for directional control. At 2200 feet the left outboard tire blew and the aircraft continued straight down the runway. At 50 knots I called for mixture off on No. 3 and 4 engines. The aircraft stopped 4600 feet after touchdown. All crew members abandoned the aircraft in an orderly manner and the small gear fire was quickly put out.

THESE PHOTOS, taken after the No. 1 prop was found and disassembled, reveal the culprit. Improper insertion of a blade switch shim in the dome assembly by depot personnel prevented the propeller from functioning properly.



Assembly Error Found

We learned a number of things from our experience. Internal fire can be expected at any time propeller speed reaches 3800 rpm. When the prop is uncontrollable by normal means, reduction in indicated airspeed or altitude is the only means available to reduce rpm. Unless fire exists, do not gang-bar the engine, as any attempt to freeze the engine will probably result in a thrown propeller. Magnesium fire can be expected in the nose section following loss of the propeller. Any propeller loss will probably result in damage to the adjacent propeller or fuselage.

Investigation of the failed propeller revealed maintenance assembly error on the part of depot personnel in that a body shim, Part No. 83762D, was inadvertently lodged between the fly weight assembly and retaining cap in the pitchlock mechanism when the propeller was installed. This body shim is one of six provided for installation as required in the blade switch and it has no relation to dome components.

Fire Nature Unknown

The forward flange of the transfer tube was found to be badly deteriorated and the lifter washer immediately behind this flange was broken. Failure of the flange and washer is attributed to loads imposed by the presence of the extraneous shim between the flange and the retaining cap.

Failure of the flange and washer permitted the transfer tube to slide approximately one and a half inches to the rear within the dome assembly, allowing the narrower diameter portion of the tube to reach the O-ring seal at the rear of the assembly. Loss of the seal at this point caused loss of hydraulic separation within the propeller dome. Without pressure differential neither the pitchlock nor the feathering function was able to accomplish their purpose.

With pitchlock and feathering action ineffective, the propeller oversped beyond the engine limitation. Evidence of engine fire was noted at

CAPT. JAMES L. SHARPLEY . . . "We learned a number of things from our experience . . . attempts to freeze the engine will probably result in a thrown propeller."

this point. The exact nature of this fire was not known pending teardown. However, the action taken in gang-barring the engine extinguished the fire but also cut off oil to the engine for a short period making ultimate seizure inevitable. The action in cutting off engine oil was not intended to freeze the engine but was necessitated by the presence of fire.

Procedures used in assembly of the propellers prior to this incident were inadequate to insure against introduction of foreign objects into propeller assemblies. All major commands have been apprised of this failure to insure proper inspection of components prior to assembly.

Crew Praised

Throughout the emergency there was no panic; all crew members carried out orders efficiently and acted in a commendable manner. The instructor engineer and instructor boom operator gave immeasurable assistance by their professional performance in meeting emergencies as they occurred. Credit for an assist also goes to GCI for its help in coordinating with the New York Air Route Traffic Control Center, Search and Rescue, and local rescue agencies within the Wilkes-Barre area. GCI also provided flight following until touch down at Stewart.

Through the efforts of many it was possible to accomplish a safe landing without casualties and classify this night's work as an incident over Wilkes-Barre.

SOMETHING FOR THE BIRDS

CALL IT YANKEE INGENUITY, "make do," something for the birds, strictly from hunger, or what you will, the enterprise exhibited by a Carswell B-36 crew saved this aircraft from an aborted mission. The idea might come in handy to save more than that for some other crew on a future mission.

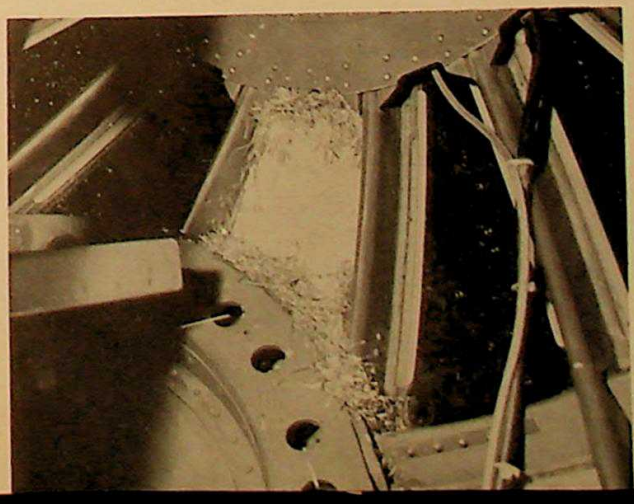
Shortly after a very early morning takeoff, the pilots and engineers on the flight deck heard a loud incongruous thump. A check of controls and instruments failed to disclose any undue conditions. When he went to his position in the nose, the navigator discovered the remains of a bird which had shattered a small window.

As cabin pressure could not be maintained at altitude, and there was insufficient oxygen for the 20-hour mission, everybody got into the act to seal the window so the mission could be continued. Such objets d'art as all available clipboards, metal placards, chaff, toilet covers, and trash bucket lids were thrown into the breach with about the same results as trying to cap a bottle of green home brew with a wad of bubble gum.

Then a solution was found. By using the sawknife from the E-1 survival kit, the lid of a skillet was cut to fit the shattered window frame. Wet chaff was forced around the edges of the skillet bottom patch and allowed to freeze. A tech order (they're good for many emergencies) and a bag of sunshades were placed over the patch to provide a little added insurance. It was figured that if the patch did blow the decompression might be slowed enough so the navigator would have time to hold down his maps and logs.

Although the crew wore oxygen masks, the patch held and the mission was completed with cabin altitude never exceeding 10,000 feet.

LOOKING LIKE a bird's nest on the ground, the B-36 crew's survival kit was used for a strange type of survival. But it worked.



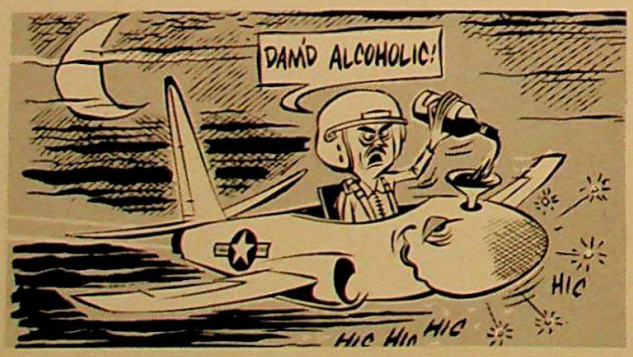
My Conscience Speaks

ANONYMOUS

THIS IS A PAGE of anonymous confessions—stories of boo-boos by those who boo-booed and who want to tell about it as a warning to others in the flying business. It is not limited to aircrewmen but is for anyone who deals with aircraft and has a sad tale to relate. Write your yarn in your own words and mail it to Combat Crew, Directorate of Operations, Hq SAC, Offutt AFB, Nebraska.

Highly Pathetical Situation

After 15 years of flying I find airplanes can still show pilots new tricks. I was in a T-33 for a night local flight. It was about 15°F on the ground—a brittle clear night. After milling around at 30,000 feet for a few minutes, I decided to come down for ILAS approaches. I called in, got my clearance, and pulled the throttle back—but lo, the mill she jus' keep ginning! The gear warning light came on, so I figured the throttle linkage was OK, but the T-machine was hell bent for places I didn't want to go at 87 per cent. I opened the throttle to check it and got a bloop-bloop from the engine accompanied by a slight rpm increase and fluctuating fuel pressure. Not caring a great deal for this bloop-bloop routine, I cut the throttle again, whereupon the rpm settled at 87 per cent, and the fuel pressure was steady. Well now? I called the tower and asked them to rustle up an IP, explaining that I had a problem I didn't entirely understand. While they started the panic procedure on the ground I dropped the brakes and let down to 20,000 to burn off some of my fuel. The rpm never changed more than one or two per cent. At 20,000 I tried the throttle again. More bloop-bloop, so I cut it back. The IP arrived and I described my situation. He couldn't solve the problem either, but did discuss how we should get the machine down. I had already decided on a flameout pattern and would cut the fuel with the master fuel cutoff, if necessary. So I descended to 10,000, pulled the nose up to get the gear down, and set up for my flameout pattern, not knowing when this unpredictable beast might go from 87 per cent to zero. Although I never had an ice warning light, I decided to try the alcohol switch and hit it once momentarily. The rpm dropped a little. I set the throttle at midpoint, and as I approached the high key I hit another blast on the alcohol switch, pulled the throttle back and, bless Ol' John Barleycorn, the rpm came right down like it should. I continued in the flameout approach and landed. The engine operated fine after that. All we could figure was that ice formed in the fuel regulator beyond the low pressure filter where the ice warning takoff is located. Thus I had ice problems with no indication. But the alcohol solved it because it flushes the whole system. When the FSO asked me that embarrassing question "Did you insure the sumps had been drained?" I was forced to answer no . . . because I hadn't.



Carburetor Heat, Beaucoup

I was flying copilot in a B-25 when, after several hours in the seat and much coffee, it became necessary for me to make a trip to the lower left side of the cabin. As I crawled out of the seat I felt my flying suit catch on something but couldn't tell what it was. The throttles, mixtures, and prop controls all looked OK. I zipped my left leg pocket closed and continued with my call. As I stood at the appointed place feeling great satisfaction, I noticed suddenly the carburetor air temperature for the right engine was over 50 degrees and heading for points higher. I got a little wet in my scramble to get back up there and shut off the heat lever. It was now obvious what my unzipped flying suit pocket had caught on. I was more than a little embarrassed. Now I know why those zippers are made to work both ways.

SIGN LANGUAGE

The crew didn't let loss of radio spoil the mission

A B-47 CREW of the 97th Bombardment Wing, Biggs Air Force Base, is about to recommend the addition of a grease pencil to the aircraft's checklist. It might not be necessary on the average flight, but it was a key item in successfully completing a mission for a crew from the 340th Bomb Squadron. A boom operator with 20/20 vision and some charts with nice clean reverse sides came in mighty handy, too, for when the tanker AC told the receiver "I read you five by five" he meant the "read" literally. Radio contact had been lost, but by an ingenious system of visual signs the tanker and receiver completed a unique air refueling.

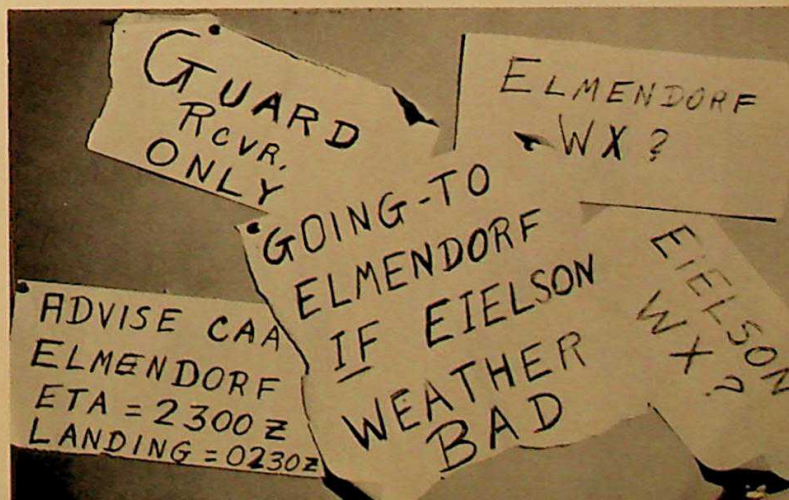
The situation occurred during an up-grading mission over Alaska. The crew was composed of Maj. Carl J. Woodrich, aircraft commander; Capt. Clement M. Latimer, instructor pilot; Capt. Chester E. Miller, pilot, and 1/Lt Charles E. Wheelahan, navigator. As the two aircraft approached the rendezvous point they lost all radio communication except that the B-47 could receive on guard channel. A completely silent electronic rendezvous was accomplished but then came the problem of inter-aircraft communications vital to completion of refueling and returning to base.

At this point it was a case of aborting the mission into which had gone many hours of planning, preflight, and coordination effort involved in upgrading the AC to combat ready, or coming up with a quick solution. Here is where the ingenuity entered via the grease pencil, the clean-backed charts, a sharp-eyed boom operator, and a crew member who could print legibly.

The receiver crew tore off a section of a chart and notified the tanker of the sans radio situation by holding a printed message against the B-47 windshield. The first message was that the bomber could receive only on guard channel. The boom operator indicated that he got the message by moving his boom up and down. He then relayed the word to his AC and an alert and cooperative tanker crew swung into coordinated action. The AC contacted the B-47 AC on guard channel to notify the bomber crew that its problem was understood.

There followed a sequence of hand-printed signs in the windshield of the receiver asking weather reports, stating when and where the aircraft planned to land, ETA, and other questions and information. The answers including ATC clearance and weather were obtained by the tanker and transmitted to the receiver on guard channel and the B-47 returned safely to base—mission accomplished with communications ingenuity that would have made G. Marconi feel like a 5X crew member.

HAND-LETTERED SIGNS in a B-47 windshield were improvised to replace radio communications and successfully complete a unique refueling.


GUARD RCVR. ONLY
ELMENDORF WX?
GOING-TO ELMENDORF IF EIELSON WEATHER BAD
ADVISE CAA ELMENDORF ETA = 2300Z LANDING = 0230Z
EIELSON WX?

With a few simple precautions you can safely fly through a tropical big blow; but thunder storms are a different story.

THE Hurricane HEAD HUNTER

By NORMAN W. NOBLE
Asst. Editor, Combat Crew

FOR SOME OF YOU troops who still cherish a naive disdain for the dangers of flying into thunderstorms, hark the words of the head hurricane hunter. Lt. Col. Earl F. Dunphy is the man. The colonel, commander of the 59th Weather Reconnaissance Squadron, has been in and out of more tropical big blows than most pilots have hangars.

Colonel Dunphy declares, "The roughest ride I ever experienced in an aircraft was in a cold front south of Denver. *I think that a real rough thunderstorm in the US poses a greater hazard to an aircraft than any hurricane or typhoon.*" He explains that while hurricanes and typhoons contain very strong winds, these winds are moving parallel to the earth's surface, and so is the aircraft. The strong winds in a thunderstorm are traveling up and down and creating "shear points."

Not that these savage storms don't hold potential havoc for the unwary, but in the words of Colonel Dunphy, ". . . flying hurricanes and typhoons is not as hazardous as it is cracked up to be, and it is high time that we in the business who know this pass along the information to other flying people who need to know."

Air Weather Service crews have been flying into hurricanes and typhoons for the past 10 years. During that period they have made at least 1000 penetrations into the "eyes" of these storms and have lost but one aircraft and crew. This was in a typhoon in the Pacific about five years ago. Earlier another B-29 was seriously damaged in a similar storm.

Colonel Dunphy adds, "We have suffered some slight damage from lightning strikes in hurricanes, but nothing serious—a few holes in the aircraft and a few damaged radio antennae. Last year the Navy lost a P2V in a hurricane in the Gulf of Mexico." This represents all of the losses and damage Coloney Dunphy is aware of—and he watches those things closely.

"It is interesting to note," Colonel Dunphy points out, "that all losses and serious damage occurred during attempted penetrations at *low level.* At 1500 feet, to be exact. After wising up to the strong turbulence at or near the surface, we changed our procedure to penetrate at the 700 millibar level (approximately 10,000 feet). More recently, our weather forecasters decided that they needed higher level data and we now

HERE'S A VIEW of a hurricane from 10,000 feet; approximately 150 miles from the eye of the storm. Note horizontal cloud structure.

MOVING INTO the hurricane center, we see a rare close-up of the eye at upper left. Note again horizontal and circular cloud movement.

fly into the storms at the 500 millibar level (18,000 feet).

"We found the turbulence to be progressively less as we went up in altitude. Last year we had a B-47 operating in hurricanes at altitudes of 30,000 to 40,000 feet without any particular difficulty from turbulence."

Because many Air Force pilots may sometime find themselves caught in or near such a tropical tempest, the commander of the 59th WRS offers some pertinent personal views:

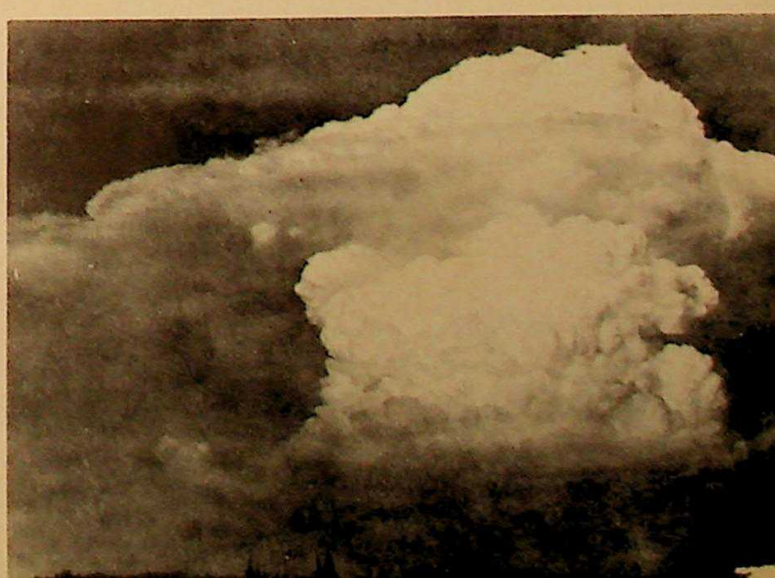
"I would not hesitate to fly into any hurricane or typhoon at any time, day or night, at altitudes of 10,000 feet or above, in any aircraft having design strength equal to that of the B-29, with a competent air crew aboard. I would use radar, such as the APS-23, to avoid the areas of heaviest precipitation, but I would not circumnavigate the storm to enter or exit through the so-called "weak quadrant'.

"Upon entering an area where turbulence might be expected (heavy precip) I would increase rpm to climb setting or a little below. One should remember that high rpm will tend to stabilize the aircraft, but too much stability is not desired. The aircraft must not be so stable that it can't 'roll with the punch'. You must ride along with the stronger forces; don't oppose them to the breaking point.

"I would keep my airspeed near a point half way between stall speed and expected structural damage speed. I would avoid high airspeeds at all cost. My chances for surviving a stall are better than my chances for surviving structural failure."

This, then, is the doctrine of a man who has been in the hurricane flying business for many years. It is based upon the personal experience of flying into a great number of tropical storms and upon the experiences of many other hurricane hunters with whom he has been associated. So you can take the word of a professional foul weather flyer who has had some really rugged experiences that a thunderstorm is just about the most malevolent meteorological monster you can tangle with. Certainly he rates it worse than hurricanes and typhoons which are usually considered about the absolute in inclemency.

As for the latter, they are not nearly as nefarious as some believe — providing you proceed properly.



ACCORDING TO the head man in hurricane hunting, he'll take them any day; but thunderstorms like this one . . . "oh no, that's another matter . . . count me out!"

what's NEW in ru

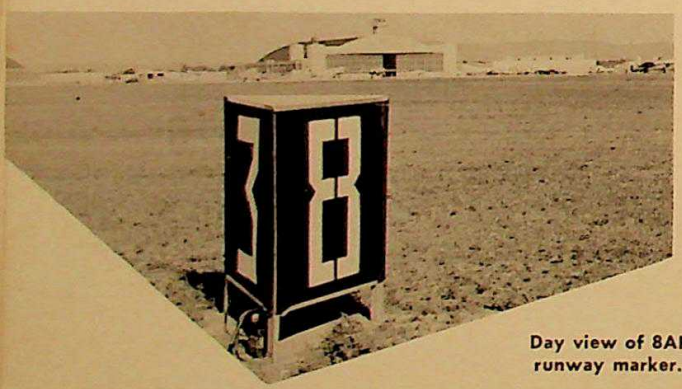
Strobeacons, Sterilization, and New Markers to

THERE HAVE BEEN some runway changes at Eighth Air Force bases — constructive changes for aircrewmen aware of them, but perhaps confusing to the uninformed. So if you find yourself about to become a guest of the Eighth in making a landing, read on.

The Eighth is somewhat of a pioneer in equipping its airfields with runway safety aids which will be mighty welcome to incoming pilots when the visibility is poor or when the landing is short. All Eighth Air Force bases are being equipped with runway end identification lighting (strobeacons), runway sterilization, and new type lighted distance-remaining markers.

Two strobeacon units at each threshold of the primary instrument runways of all Eighth Air Force fields will provide pilots with unmistakable runway threshold reference. The two units, flashing twice each second in synchronism, distinctly mark the beginning of the runway to greatly reduce the danger of missed approaches, overshooting and undershooting. In addition, because of their wide angular visibility, the units provide positive circling guidance for pilots in the VFR traffic pattern.

This type of lighting unit has a special Xenon-filled gaseous discharge flash tube operating in a condenser discharge flash circuit. The total integrated light output produced in a flash lasting approximately 250 microseconds reaches 30 million candlepower. The vivid blue-white flash of the strobeacons can be seen as far as 55 miles at night.



Day view of 8AF runway marker.

Day view of USAF runway marker.

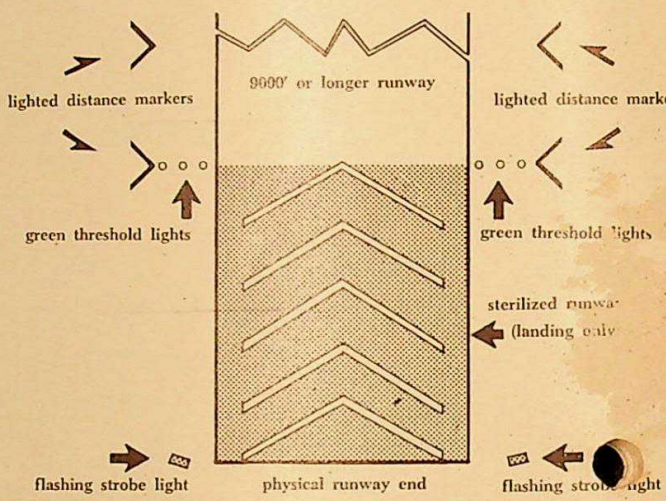


DIAGRAM of all 8AF runway aids to improve the whole area of night operations.

The lights are approximately 22 inches square and have been mounted in a 20-degree toe-out at the physical end of the runway pavement. Where runways have been sterilized, the lights also will be at the physical end of the runway rather than at the displaced green threshold lights.

Similar lighting systems are to be installed at 30 airports throughout the country by the CAA.

The Eighth's sterilization program provides that the first thousand feet of each runway 9000 feet or longer will be made sterile for landing only—the entire runway will be used for take-offs. This will give pilots 1000 feet of paved load-bearing underrun. The green threshold light wing bar will be moved 1000 feet down from

8TH AF runway safety aids

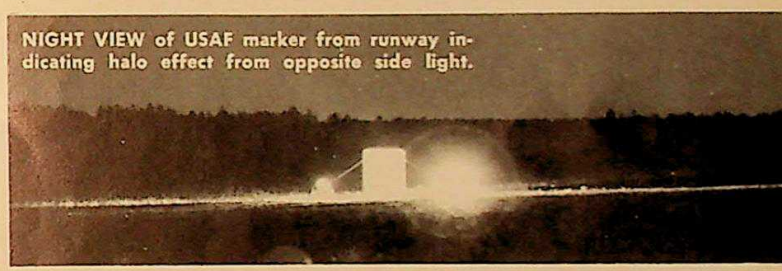
ighlight 8th AF Runways

the physical threshold and the area will be painted with standard chevron markings. In addition, red filters will be provided to cover the approach side of the first thousand feet of runway lights to indicate a non-landing area. The standard white lights will be visible on the reverse side for aircraft taking off or landing from the opposite direction. The reverse side of the green displaced threshold bar will be blacked out so that it will not be visible to aircraft taking off.

Existing runway distance markers will not be affected inasmuch as they indicate runway distance remaining. The centerline and the acceleration lines across the runway at the 3000-foot mark will remain since they are referenced primarily for aircraft taking off. The physical runway threshold will be identified by the stroboscopic flashers.

The system will be in effect until 1000 feet of load-bearing overrun is available on each primary runway within the Eighth Air Force. The filtering of runway lights has been designed to duplicate as closely as possible the appearance of 1000 feet of configuration B approach lighting. GCA and ILS touchdown points have not been relocated, so pilots need not be alarmed if they discover they are approaching the GCA touchdown point at or near the threshold identification lights.

NIGHT VIEW of 8AF marker from runway illustrating ease of reading.

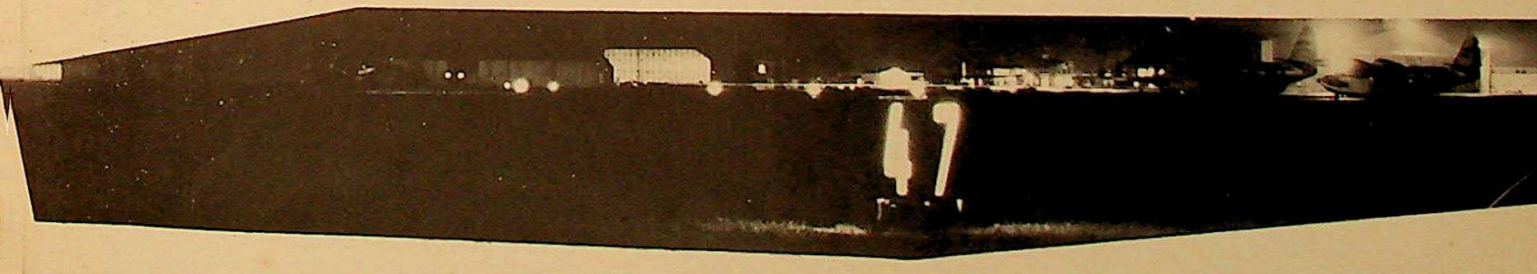


NIGHT VIEW of USAF marker from runway indicating halo effect from opposite side light.

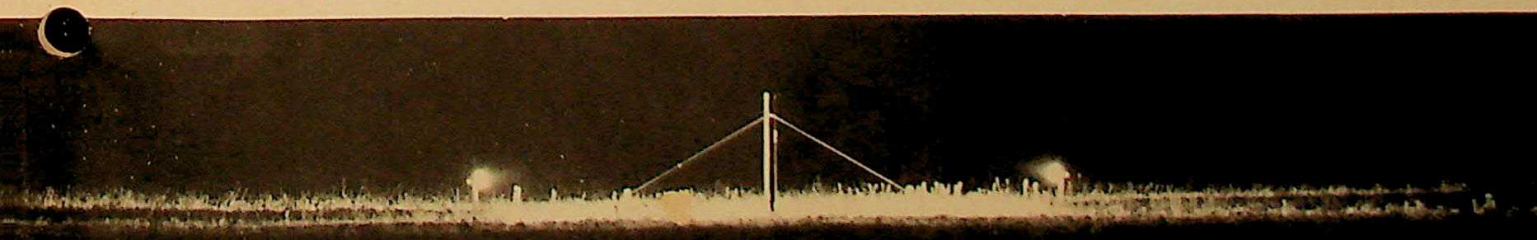
As for runway markers, the Eighth has gone a step further than the Air Force plan to illuminate them and indicate distance remaining in 1000-foot increments. Odd footage is divided equally and added to the ends of each runway. An internally lighted triangle marker has been devised to minimize glare and halo effect. It proved so successful that not only Eighth Air Force but all other SAC bases will be so equipped in the near future.

So if you fly into an Eighth Air Force base and it looks as if something new has been added—it has, for your benefit.

Night abeam view of 8AF marker.



Night abeam view of USAF marker.



Save Aircraft and Crews in '58

Capt. Paul Hendrix

Pilot of the Month

SKILL IN making a single-engine landing at night on a strange, snow-covered high altitude field in a mountainous area has earned the SAC Pilot of the Month title for Capt. Paul Hendrix, 809th Air Base Group, MacDill Air Force Base.

Making his first cross-country as an AC in a C-119C, Captain Hendrix lost the right engine while on instruments at 12,000 feet and 150 miles east of Hill AFB. Closest usable alternate was Rock Springs airport with an altitude of 6750 feet and a snow and ice-covered runway 6900 feet long and 150 feet wide. There was no crash equipment available, but city fire trucks were summoned. Visibility and ceiling were good in the vicinity.

As Captain Hendrix approached the runway at 110 knots with partial power on the left engine he suddenly realized that, due to snow obscuring runway lights, he had lined up with the left edge runway lights to his right. He immediately raised the gear and slowly added power for a go-around. He was able to maintain 115 knots on the climbout, and the rate of climb rose to 600 feet per minute. At 300 feet above field elevation he started a slow climbing turn and raised flaps when 200 feet above highest obstruction within 10 miles. The left engine was kept at 60 inches mp, 2550 rpm, cowl flaps closed until well established in the climb. Power was then reduced to 50 inches for the remainder of the climb. The rest of the go-around pattern was standard and the aircraft landed without further incident.

The professional performance of Captain Hendrix under highly adverse conditions fully certifies him for the title "Pilot of the Month."

M/Sgt Richard Devine

Maintenance Man of the Month

MASTER SERGEANT RICHARD J. DEVINE, 72d FMS, Ramey AFB, has been named SAC Maintenance Man of the Month in recognition of his exceptional performance as expediter and coordinator of all his squadron's field maintenance specialist work on the flight line. During the period for which he is cited he is especially credited with a major contribution to the success of three wing missions by providing outstanding planning and supervision of maintenance support. During one operation Sergeant Devine assumed, without advance notice, over-all squadron supervision of maintenance and, by exercising wide versatility, exceptional technical knowledge, and singular devotion to duty, he achieved an effectiveness of 27 airborne B-36 aircraft out of 27 scheduled. His skill and his selfless application to the job have prevented many late takeoffs and aborted missions and reflect noteworthy credit upon the Air Force.

The honored crew: from left, 1/Lt. Roland A. Jobin, RadNav; Capt. Edwin C. Partridge, AC; M/Sgt. Claude E. Sanbower, ECM; M/Sgt. Maurice R. Stokem, G; Capt. George H. Pennington, P; and 1/Lt. Sadayoshi Sakamoto, Nav.

Westover B-52 Crew Saluted

THE B-52 CREW of Capt. Edwin C. Partridge, 99th BW, Westover AFB, displayed excellent professional ability and knowledge of aircraft systems to solve a serious in-flight emergency and win honors as SAC Crew of the Month.

During a mission the normal interphone had slowly died out and the alternate interphone was used. The number one hydraulic pack failure light came on. As the penetration was started the air brakes would not extend until the battery was switched to "emergency". When the gear handle was placed down, the number four pack failure light came on and only the right main gears extended. The hydraulic packs could not be restarted. The tip gears extended by the emergency switch. The battery was switched back to normal and the left forward gear then extended by the emergency switch. The aft gear, however, resisted all attempts to make it operate.

Captain Partridge immediately climbed the aircraft to best altitude and set up maximum endurance power—a bit of foresight that paid off.

A complete cockpit check was made but only a seemingly unrelated factor was discovered—the forward battery was not charging and the voltage had dropped to five volts. The switch was turned off to conserve the battery and 15 minutes later it read 17½ volts. The switch was then put to "normal." The battery furnished just enough power to operate the gear solenoid and the left aft gear came down. Landing was then completed without further difficulty.

Investigation showed that the forward battery charging relay had failed in flight allowing the battery to run down. Normally this would have had no effect as TR power should have gone through the pilot's forward switched battery bus relay to the switched battery bus. However, the pilot's forward switched battery bus relay had failed at some previous time allowing battery voltage to be fed to the forward switched battery bus and draining the battery.

If Captain Partridge and his crew had not taken quick and positive action, the forward battery could have deteriorated to the point that it could not have rebuilt the voltage. The crew solved the emergency in an outstanding manner, demonstrating exceptional knowledge of the aircraft's systems and their operation.

Flying Safety Officer of the Month

Maj. Wm. G. Broach, Jr.

MAJOR WILLIAM G. BROACH, JR., safety director, 376th BW, Lockbourne AFB, has been selected SAC Flying Safety Officer of the Month. Major Broach's honor is in recognition of his outstanding contribution to the safety program of the 376th which holds the U.S. Air Force record for jets of more than four years of accident-free flying. His safety program includes development of a keenly competitive intra-squadron and individual rivalry spurred by unit trophies and individual awards. In addition to emphasizing operational hazard reporting and attending weekly 60-9 and daily operations standup briefings, he publishes a periodic pamphlet, "Safety Tips," promotes attention-getting squadron bulletin boards and accident prevention placards displaying photographs of personnel violating safety procedures.

FLYING SAFETY TROPHY FOR THE MONTH

MALMSTROM HONORED—Col. Murray A. Bywater, 4061st ARefW commander, accepts the monthly SAC Safe Flying Award for December from Col. Ralph W. Stanley, SAC chief of safety, on behalf of Malmstrom AFB. Left to right, Mr. Grant Brown, base safety engineer; Maj. W. M. Hatcher, wing safety director; Col. R. E. Robinson, wing director of operations; Colonel Stanley; Col. J. C. Edwards, deputy wing commander; Col. Bywater; Col. S. P. Labarbera, director of materiel; Lt. Col. R. O. Bandlow, base commander; and Capt. U. V. Wittenberg, base director of safety.

SAC Standings

Dow AFB moved from second to first on theSAC safety Totem Pole for January which is quite a feat for a northern base. March AFB started off the new year by leading the pack in the Base of the Year competition.

January Totem Pole Status

1. Dow	12. Forbes	23. Lake Charles
2. Ellsworth	13. March	24. Walker
3. Ramey	14. Whiteman	25. Westover
4. Little Rock	15. MacDill	26. Altus
5. Travis	16. Barksdale	27. Castle
6. Carswell	17. Biggs	28. Malmstrom
7. Mountain Home	18. Schilling	29. Laughlin
8. Dyess	19. Pease	30. Fairchild
9. Davis-Monthan	20. Plattsburgh	31. Hunter
10. Lockbourne	21. Lincoln	32. Homestead
11. Offutt	22. Loring	33. Pinecastle

Base of the Year Competition

1. March	12. Offutt	23. Ramey
2. MacDill	13. Biggs	24. Carswell
3. Dyess	14. Westover	25. Loring
4. Barksdale	15. Mountain Home	26. Fairchild
5. Forbes	16. Castle	27. Dow
6. Schilling	17. Whiteman	28. Laughlin
7. Little Rock	18. Walker	29. Travis
8. Lincoln	19. Plattsburgh	30. Altus
9. Lockbourne	20. Pease	31. Hunter
10. Lake Charles	21. Malmstrom	32. Homestead
11. Davis-Monthan	22. Ellsworth	33. Pinecastle

HALL OF FAME

Over Eight Years

5th ABG, Travis	July '49

Over Seven Years

93rd ABG, Castle	Nov '50

Over Five Years

72d BW, Ramey	June '52
4060th ABG, Dow	July '52
3rd SSS, Barksdale	Jan '53

Over Four Years

5th AD, Morocco	May '53
801st ABG, Lockbourne	June '53
7th AD, UK	Aug '53
11th BW, Altus	Sep '53
376th BW, Lockbourne	Oct '53
96th ABG, Altus	Nov '53
7th BW, Carswell	Jan '54

Over Three Years

804th ABG, Hunter	May '54
3rd AD, Guam	June '54
5th BW, Travis	July '54
4081st SW, Harmon	Feb '55

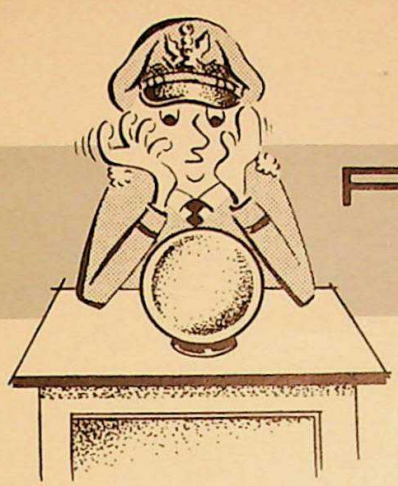
Over Two Years

28th ABG, Ellsworth	Mar '55
68th BW, Lake Charles	Mar '55
303rd BW, Davis-Monthan	June '55
321st ABG, Pinecastle	June '55
4th SSS, Dyess	June '55
825th ABG, Little Rock	July '55
820th ABG, Plattsburgh	July '55
92d ABG, Fairchild	July '55
99th BW, Westover	Aug '55
9th BW, Mountain Home	Nov '55
823rd ABG, Homestead	Nov '55
305th BW, MacDill	Nov '55
308th BW, Hunter	Dec '55
819th ABG, Dyess	Jan '56
384th BW, Little Rock	Jan '56
802d ABG, Schilling	Jan '56
817th ABG, Pease	Jan '56
95th BW, Biggs	Feb '56
6th BW, Walker	Feb '56

Over One Year

4060th ARefW, Dow	Mar '56
55th SRW, Forbes	Mar '56
809th ABG, MacDill	Mar '56
818th ABG, Lincoln	Apr '56
2d SSS, Pinecastle	May '56
307th BW, Lincoln	May '56
803rd ABG, Davis-Monthan	May '56
812th ABG, Walker	June '56
72d ABG, Ramey	July '56
340th ABG, Whiteman	Aug '56
4061st ABG, Malmstrom	Aug '56
9th ABG, Mountain Home	Aug '56
4061st ARefW, Malmstrom	Oct '56
805th ABG, Barksdale	Nov '56
28th BW, Ellsworth	Dec '56
42d ABG, Loring	Jan '57
4050th ARefW, Westover	Feb '57

To gain listing in the Hall of Fame a SAC unit must fly accident-free for 12 months. Dates are month and year in which the current accident-free period began.



FORECASTER TO CREW

By MAJ. HORACE W. MEREDITH
Offutt Weather Central

Spring Squall Lines and the Tornado

COLD AIR MASSES that move from the North Pacific over the Rockies in the spring are particularly frigid and moist, and remain chilled over the deep mountain snow. Warm Gulf of Mexico air that moves northward is also moist but is heated under the warm spring sun. When the cold air punches its way out of the mountains and clashes with the Gulf air, severe squall lines develop with damaging winds, heavy rainstorms, hail, and tornadoes.

Protection of life and property from such storms is receiving a great deal of attention. Meteorologists have made great strides in predicting such severe weather with a special Air Force and Weather Bureau severe weather warning unit at Kansas City. Radar observers have developed considerable skill in locating and tracking thunderstorms and tornado funnels. Aircraft controllers and air crews are using radar to develop ever-increasing skill in keeping aircraft out of severe weather. Storm-warning plans are being developed, particularly by Civil Defense agencies, that are giving timely warnings so that persons on the ground may take cover.

Maximum flight and property safety is being developed by knitting together all of the above functions into an over-all safety plan:

1. The forecasters at Kansas City receive weather and radar reports from throughout the United States and carefully analyze temperature, moisture, and flow characteristics of the air masses. From these reports and analyses they forecast the areas where severe weather is likely to occur.

2. Severe weather warnings are prepared and disseminated to aviation and Civil Defense interests.

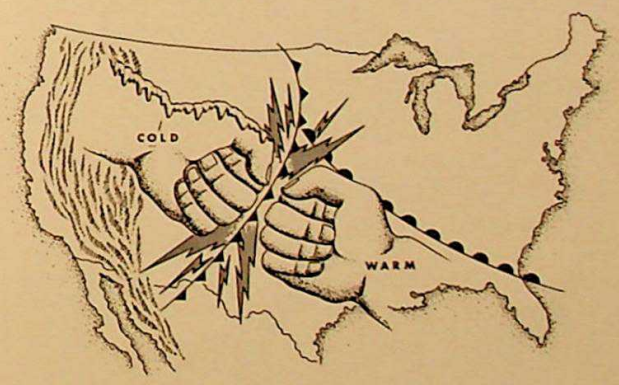
3. In affected areas the warnings are broadcast to the public on radio and TV, and specific military and civil storm-warning plans are executed.

4. Radar and ground observers search for the actual location and movement of storm echoes and tornado funnels and make this information available to all interested agencies.

5. Aircraft flights are planned and executed with ever-increasing emphasis on the use of radar facilities of Air Defense, Traffic Control, Weather Service, and airborne and approach radar. The real safety payoff comes from teamwork among the aircrew, operations controllers, traffic controllers, and tower controllers where all are weather echo conscious.

6. Civil Defense is leading the way in insuring that storm warnings reach all the people that are in the path of a tornado. In such a storm-warning plan the issuing agency keeps in close liaison with the Severe Weather Warning Center and available radar. Numerous ground observers are used on the southwest edge of populated areas. A well-publicized and audible 'take cover alert" is implemented for the affected area whenever a tornado is sighted.

All of us have a responsibility in the safety program whether on the ground or in the air. Careful flight planning and radar monitoring are paramount for flight operations. A base storm-warning plan that includes a "take cover alert" is a must for ground safety on our air bases. Now is the time to make sure our safety plans are in order.



Here is a final plea for crew members with respect to spring squall lines: FOR HALF THE RATE IN '58, DON'T PENETRATE.

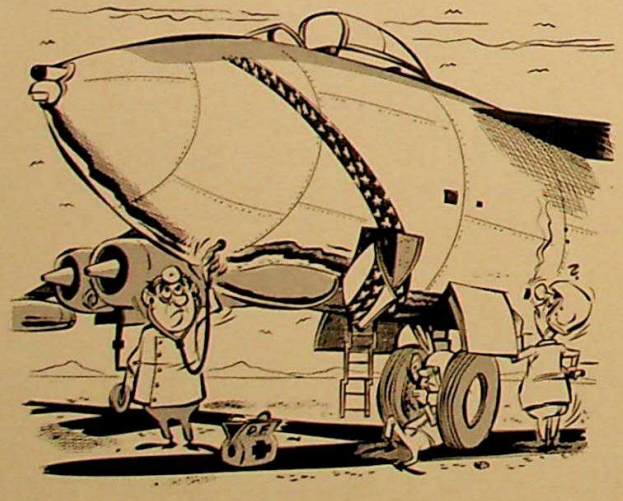
DOC Flighty

Coveralled Competence

THE OLD FELLOW hates to admit this but he has finally joined the ranks of the non-inviolates. After 39 of Jack Benny's years he has joined the 8-mile-high club—but the hard way. In other words he has finally taken a ride in a non-fan type SAC flying machine, a thing called by the TOs—a B-47. A thing featuring workable ejection seats for a pilot, copilot, and navigator plus a sacro-iliac irritant for the idiot who wants to ride as a fourth member of the crew—a folding shelf that the flight surgeon can try to sit on and from which he can bail out if the plane is in stalling speed but from which he can only wave a fond "goodbye" to the rest of the crew in case something gets fouled up at normal cruising speed.

And before we get any farther into this, if any of you think the Old Doc is yellow—you're absolutely right. And for the record, the Doc had the full treatment—mass night in-flight refueling in sub-minimal weather with a student boom operator and a tiger flying the KC (like stuffing a wet noodle . . .) takeoffs into weather that reminded the Old Fellow of tracking typhoons in a B-50, but tempered by beautiful letdowns and landings into Sidi, Terrejon, Brize, and Goose. All this by the finest pair of guys that could look out and see where they were going that the Old Boy has ever had the pleasure of flying with.

But the thing that most impressed the Doc was the fact that this bucket of B-47 bolts and wires flew for a good 30 hours without a writeup of any kind. Flighty has had many longer flights before—up to 100 hours at a trip—but never without a fairly long list of mechanical booboos, but old Octane 27 made the whole 18 holes without a discrepancy—shot par all the way.



And why did 27 make the trip in good shape? Twenty Seven wasn't a hand-picked flying machine; it was simply the next one on the line. It had been checked out by a routine ground crew for flight. Someone asked for a plane and got No. 27.

The crew chief that post-and preflighted the big bird didn't have the vaguest idea who was going to be the next pilot. All he knew was that he had a job to do. He had to tighten this nut, check that gauge, and make sure that this thingamy was snug before he was off duty. And all the Sarge had to do was make sure that the first guy did what he was supposed to do. But does the Sarge and the first guy really know *why* he has to do this job perfectly?

The reason is ridiculously simple. Nobody knows when some idiot in USSR is not going to be kidding. And if that should happen, the whole future life of my kids and yours depends on whether you—as a supervisor—check carefully enough on the work that the guy under you does.

Morale plays a big part in safe flying and is something that concerns your fly docs more than you realize. Family housing, recreaction facilities, improved medical care for the families, well-stocked shelves in the commissary — these are some of the things that your feathered healer keeps his eye on because they have a direct effect on your peace of mind.

But there is one field where the Old Doc doesn't feel enough emphasis is put—and that is on the coverall set that takes over when you get ready to hit the sack. Five will get you ten that no one from the newest OJT to the oldest Sarge that did the final check is aware of the gratitude a crew like Octane 27's has after a long no-writeup trip. This is the kind of morale boost that makes you feel good inside and gives you one less thing to worry about the next time you step into a flying machine.

Col. John A. Nocross

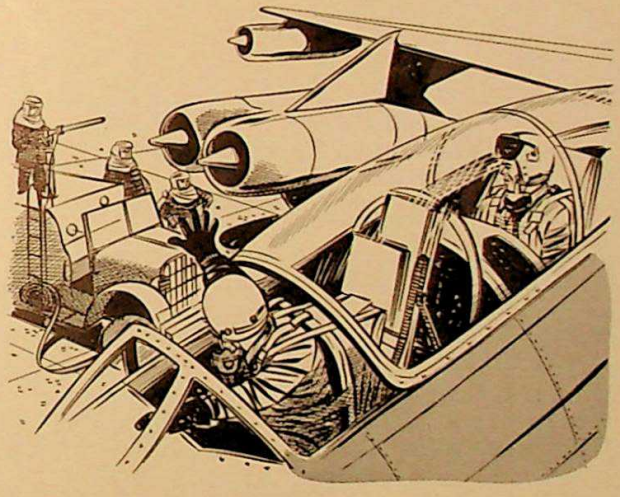
Operational Hazard Report Digest

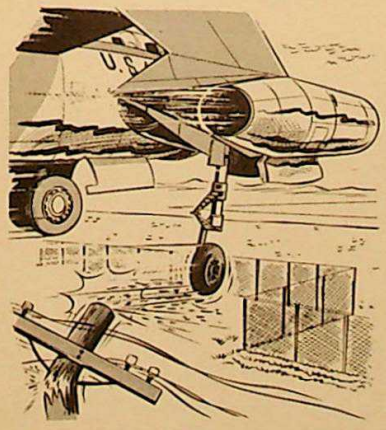
Conducted by Capt. H. F. Richards
Safety Division, Hq. SAC

report an incident . . . prevent an accident!

B-47 It Can Happen

Shortly after take off the aircraft commander noticed the No. 5 fire-warning light on. He advised the crew and placed No. 5 throttle in idle. The fire light continued to burn, so he placed the throttle in cutoff. The light continued to burn and the copilot reported smoke coming out of No. 5 engine. The 4th man also advised that he could smell something like rags burning. The AC pulled the fire button and 30 to 45 seconds later the fire-warning light went out. The pilot stated that he could see flames reflected in the nose section. The AC visually checked the engine several times and could see light gray smoke pouring forward out of the nose section of the engine. The copilot reported that he could still see flames reflected in the nose section, so the AC accomplished a fire shutdown on No. 4 engine also. Airspeed was maintained between 300 and 310 knots. The aircraft was climbed to 7500 feet and the pilot reported he could still see flames and smoke. The AC considered shutting down No. 6 engine, but gross weight and continuous reports of fire by the copilot resulted in the decision to land immediately. The AC considered the possibility of bailout, but rejected this in favor of immediate landing. Best flare was computed at 165 knots and the aircraft crossed the fence indicating 167-168 knots. Touchdown was normal with brake chute and approach chute deployed, engines No. 1, 2, and 6 cut. Number three engine was kept running for hydraulic pressure. The aircraft was stopped on the runway despite one blown tire. Investigation of the warning light cause revealed an electrical short in the fire-warning light detector harness. The harness was replaced. There was no evidence of fire in either engine. How could it happen? Who knows. But it could happen to you. This aircraft got down safely; but another, in which three engines were shut down because it was erroneously thought there was a fire aboard, ended in a fatal crash.





B-47 Glide Path Low, Recovery Slow

The copilot was flying a GCA approach from the rear seat. He was close to the center line all the way down but stayed low on the glide path. At GCA minimums the final approach controller reported the aircraft 50 feet low. The IP realized they were actually lower than that and assumed control to go around. He added climb power at 14 knots above best flare speed but the aircraft continued to settle. The right outrigger struck the top of a light pole approximately one mile short of the runway. After landing, splinters of wood were found in the outrigger although there was no damage. Crew coordination, cross check of instruments, and immediate corrective action would probably have prevented this close call. SAC has lost several aircraft and crews as a result of incidents which seemed less serious than this.

The attitude gyro is a friend indeed, but how reliable is this friend in need?

CROSS CHECK

From BOEING AIRPLANE COMPANY

CROSS CHECKING of primary flight instruments is not a new technique among pilots. However, when the big iron bird is rattling around in turbulent air with such violence that the speedle-needle and the air-ball are even hard to find—let alone read—the man with the hands full of control wheel is likely to settle for the stability of the altitude indicator. And if this is what he is prone to do, he should know what errors this little jewel can have.

The answer depends on the maneuvers of the airplane and ability of the pilot to interpret and understand the instrument. For instance, if the pilot has neglected to adjust the pitch trim knob on the attitude indicator, an error as high as 13 degrees in pitch can exist which could never be discernible in turbulent air and zero visibility. If there is a prolonged increase or decrease in airspeed, an additional error as high as seven degrees in pitch will exist. In the event turns are made, a 12-degree roll error may also be induced.

A possible total error of 20 degrees in pitch and 12 degrees in roll is far from being reliable, especially during turbulence. These errors are extremely critical at very high or low altitude.

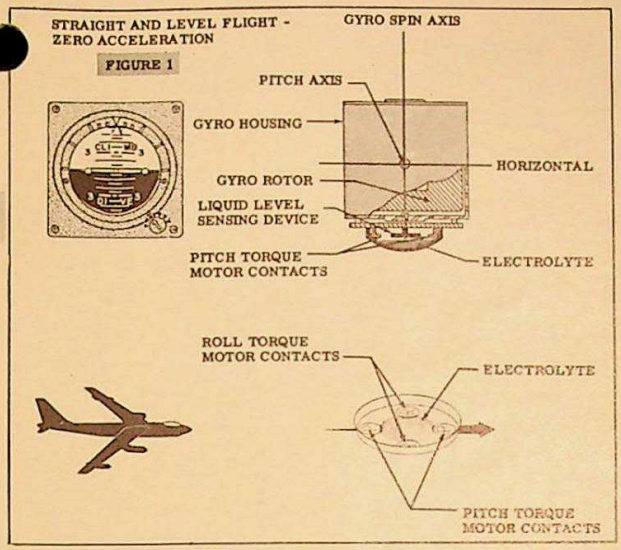
The attitude indicator currently in use is accurate within one degree providing the accelerations are not prolonged, that turns are made at a rate greater than 30 degrees per minute, and that the pitch trim knob is properly set. However, it is possible to lose control of an airplane when the B-1 attitude indicator is used as the only pitch and bank reference. Some accident investigators believe that several airplanes may have been lost because the instrument was used without human understanding.

As a primary flight instrument the vertical gyro indicating system is most heavily relied upon under the most undesirable flying conditions. However, B-47 pilots have reported erroneous readings from the B-1A/K-4B VGI system, emphasizing the fact that it is not infallible.

Boeing Airplane Company executed a flight test analysis to establish the reliability of the VGI system on the B-47. The results of the flight tests confirmed the results of theoretical analysis within the limits of practicable and safe flight maneuvers. Analysis shows that error can be introduced into the system under two general categories—dynamic force and mechanical conditions.

Dynamic Force Conditions

Dynamic conditions in flight produce *acceleration forces* which in turn act on all masses in the



airplane including the vertical gyro erection system. When the gyro erection system is functioning under unaccelerated flight conditions the gyro spin axis is aligned with the force of gravitational acceleration. Therefore, when new acceleration forces are introduced they combine with the gravitational force to form a new *resultant force*. The vertical sensing device of the gyro is incapable of differentiating between the "true vertical" (gravitational acceleration) and "false vertical" (gravitational acceleration + new acceleration forces), and it will tend to erect the gyro to the vertical it senses at a fixed rate of six degrees per minute (Fig. 2 and 3).

Acceleration or Deceleration

Longitudinal acceleration error can be best

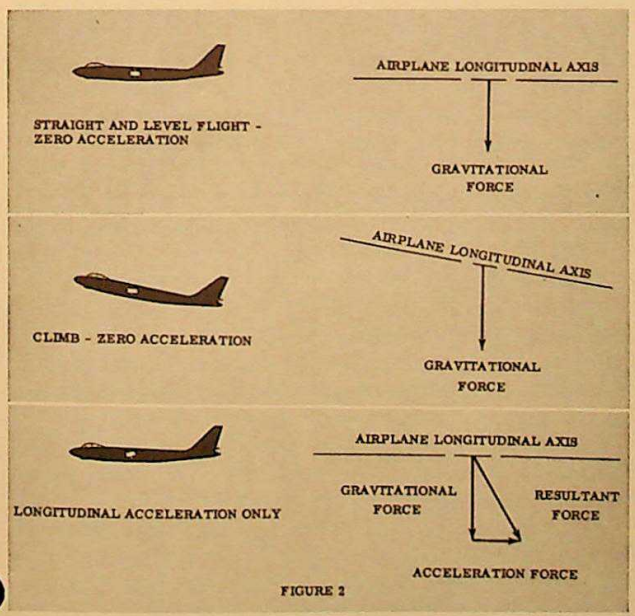
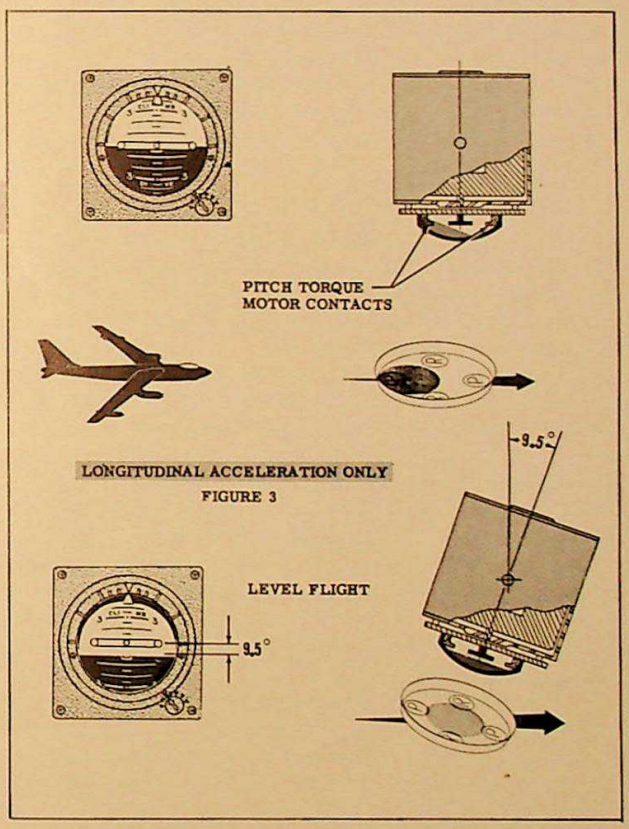


FIGURE 2

illustrated by a hypothetical case:

A takeoff is being accomplished during ... ness and light ground haze. At unstick a five degree climb is initiated. The engines are maintained at 100 per cent and the landing gear and flaps are retracted. The total elapsed time from brake release on the runway until the flaps are fully retracted is approximately two minutes. During this period the airplane is subjected to an acceleration force of .1 to .3 g. This acts on the erection system and the gyro is precessed off "true vertical" at a rate of six degrees per minute toward the "false vertical" thus inducing an erroneous climb indication.

Of course, as the gyro induces this climb indi-



cation the pilot will correct by holding to an indicated five-degree climb, and by the time the gyro has precessed to five-degree climb error, the pilot has canceled all true climb and the airplane is flying straight and level even though a five-degree climb indication on the gyro still exists. At this point the pilot makes the error of relying solely on the gyro and fails to cross check his rate instruments. The acceleration continues and the error continues to increase at the erection rate of the faithful gyro. The pilot is still unconscious of this error and places the airplane in a dive. Less than a minute later the airplane contacts the ground at a dive angle of four degrees.

The maximum possible error in the B-1 system

of the B-47 during a maneuver of linear acceleration only is 9.5 degrees. This error will appear as a climb error in the indicator during a normal or water injection takeoff of a 140,000-pound airplane. Correction of the error at the gyro erection rate will begin at the time acceleration ceases and will require 95 seconds to remove. This 95-second period must be during entirely stabilized or decelerating flight. A constant heading takeoff under any other conditions than those outlined for this maximum error will produce an error in the gyro of less than 9.5 degrees.

Deceleration can induce an error of eight degrees maximum. This will appear as a dive error in the indicator during the maximum deceleration of a 120,000-pound airplane from 425 to 215 knots. It will require 80 seconds of stable flight or acceleration to eliminate the maximum error under these conditions. A deceleration under any other condition while maintaining a constant heading will produce less error.

Combined Angular and Longitudinal Acceleration

The basic principles of induced error for longitudinal acceleration also apply to angular acceleration. The only difference is the manner in which the additional force is created which establishes the "false vertical."

A rate gyro is employed in the B-1 system as a turn error compensation device which causes the roll axis torque motor contacts to be de-energized during turns at a rate greater than approximately 30 degrees per minute (bank angle of 12 degrees). In slower turns the gyro will be subjected to the centrifugal forces shown in Fig. 4 and 5. Therefore, any correction in the heading change utilizing a slow turn rate will cause a "false vertical" to be erected into the roll axis at a rate of six degrees per minute. This error, which would cause the bank angle to be increased, may not seem critical. However, the "false vertical" does not remain constant in direction because the airplane is turning and the "false vertical" rotates from the roll axis to the pitch axis every 90 degrees of heading change. This results in various combinations of "false verticals" depending on the maneuvers of the airplane, as shown by Fig. 6. The figure shows that a two-minute acceleration period accompanied by a slow turn of less than 30 degrees per minute, followed by a rapid turn period will cause a "false vertical" of 12 degrees left roll at the start of a rapid turn and 12-degree right roll at 135 degrees of the turn. A "false vertical" of 12-degree climb error at 45 degrees of the turn will change to a 12-degree dive error at the 225-degree point of the turn.

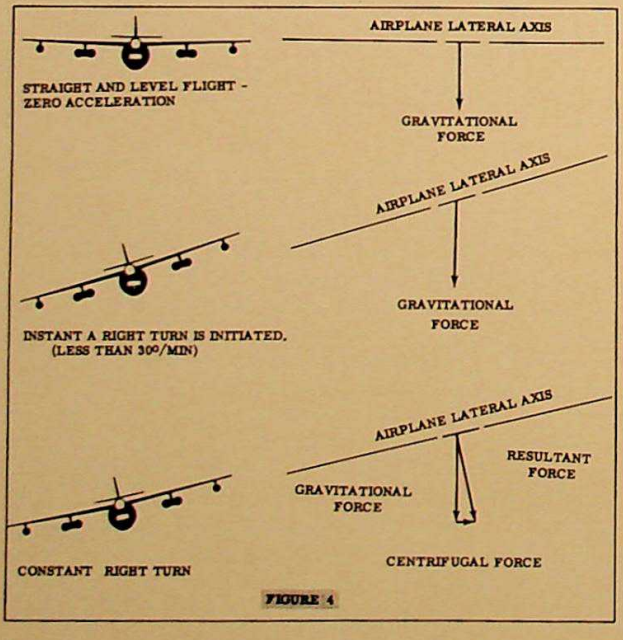
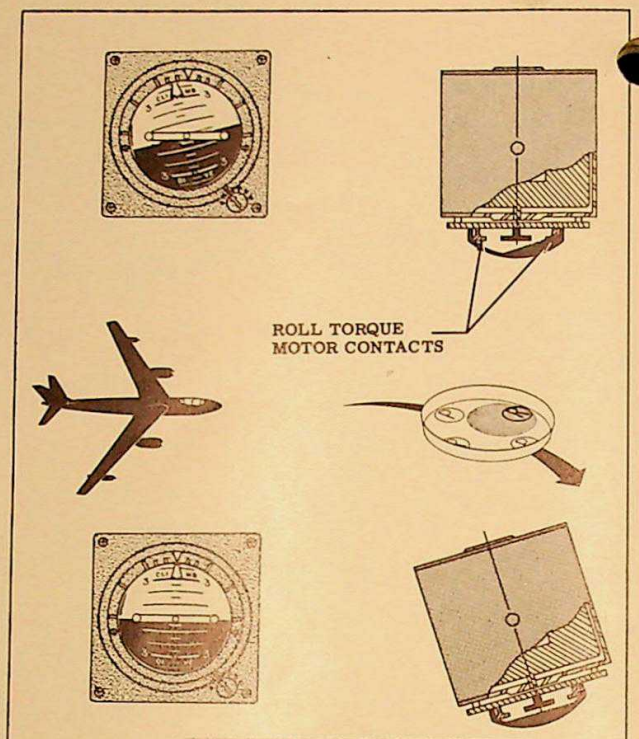


FIGURE 4



RIGHT TURN - ZERO LONGITUDINAL ACCELERATION OR DECELERATION

FIGURE 5

The following typical flight will illustrate the safety aspects of the "false verticals" generated by combined angular and longitudinal accelerations:

After a seven-hour mission, IFR clearance was canceled at 4000 feet with the airplane on a southerly heading. The wind was SSW 15 knots and visibility was 15 miles. The radar showed thunderstorm echoes in all quadrants except southeast. While on the downwind leg the aircraft commander complained of a terrific cross-

wind. The wind had shifted west and had increased in intensity with visibility being reduced by blowing dust. Shortly thereafter the aircraft commander declared a go-around and requested left-hand traffic pattern for the runway as this would put him in the only clear quadrant. Before the aircraft had completed the base leg the wind again changed direction to NW 35 knots with gusts to 50 knots and visibility reduced to one-quarter mile. The pilot was advised of this condition while crossing the field at an altitude of 300 to 600 feet. A left turn was initiated as the airplane crossed the end of the runway. The airplane crashed in an open field, in a wings-level attitude, on a southeast heading (45-degree turn) about five miles from the runway.

Compare the airplane maneuvers of the above example with those in Fig. 6. Assume the base leg turn was overshot because of the wind conditions and the airplane heading was changed at a slow rate to line up over the runway for the go-around. At this time the airplane was being accelerated and the wheels and flaps were being retracted. The duration of this condition was approximately two minutes. Then a left turn at a rate greater than 30 degrees per minute was executed to a southeasterly direction (45 degrees), then straight until the airplane struck the ground after a duration of another two minutes. The attitude gyro would now have accumulated more than 12 degrees nose high error and would have canceled out the roll error indicating wings level at impact.

Thus a series of flight maneuvers can bring about an accumulation of errors in the B-1 system of such magnitude that reliance on the system can cause a fatal accident.

Mechanical Conditions

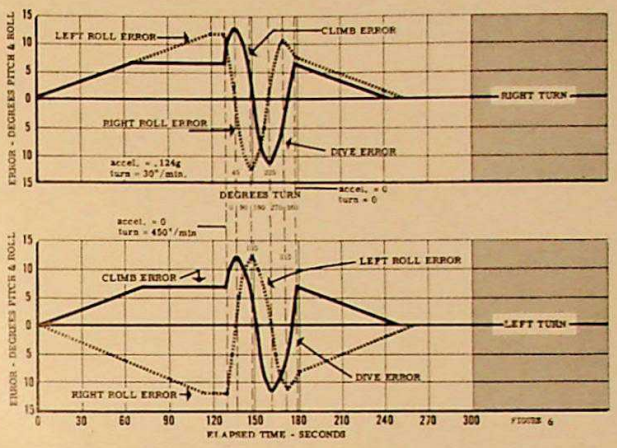
There are several mechanical methods by which error can be introduced in the VGI system including parallax error, pitch trim knob adjustment error, and mechanical stop error.

Parallax Error

Parallax error in the system is, in reality, an error in reading the indicator. This error is induced to the maximum when the pilot's seat is readjusted after the gyro pitch trim knob has been set.

Pitch Trim Knob Adjustment Error

Another source of error is failure of the pilot to readjust the pitch trim knob during changing airplane level flight attitude. The magnitude can be determined from the level flight attitudes the B-47 will assume. The maximum error would be



introduced in the B-47 when an 11-degree nose high trim is required for level flight at a specific gross weight, velocity, and altitude, and then over a period of flight time a new gross weight, velocity, and altitude could require as much as two degrees nose down trim. If the pitch trim knob on the gyro was not readjusted during such changing conditions, the maximum error could amount to as much as 13 degrees on the B-47. This error is solely an indicator error and is not an error in the gyro. It will remain in the pitch reading until the pitch trim knob is readjusted.

Mechanical Stop

A mechanical stop is provided on the B-1 system gyro housing to prevent the gyro spin axis from aligning with the inner gimbal axis and locking in this position. This mechanical stop will strike the inner gimbal when the airplane pitch attitude exceeds 80 to 85 degrees dive or climb. If the airplane exceeds these limits an unpredictable amount of error will be induced. This condition is common to all vertical elements which are stabilized by a single gyro.

Because of a series of accidents wherein the attitude of the airplane had not been properly maintained, it is suspected that cross reference of flight instruments is not accomplished and that the full impact of attitude gyro errors is experienced. This is considered especially pertinent when the pilot is confronted with other cockpit emergencies which divert his attention.

The crux of the problem is an awareness of gyro limitations and a knowledge of conditions under which errors occur. Therefore it is essential to cross check to keep the attitude gyro trimmed properly and to know the gyro actions during accelerating and turning maneuvers.

Never follow the attitude indicator during takeoff.

Colorful Conversation

Child, recently transferred from Castle to Loring: "Mom, can Jimmy and I go out and listen to Daddy put the tire chains on?"

This Transient Crew Had A Choice . . .

unauthorized MAINTENANCE or NONE!

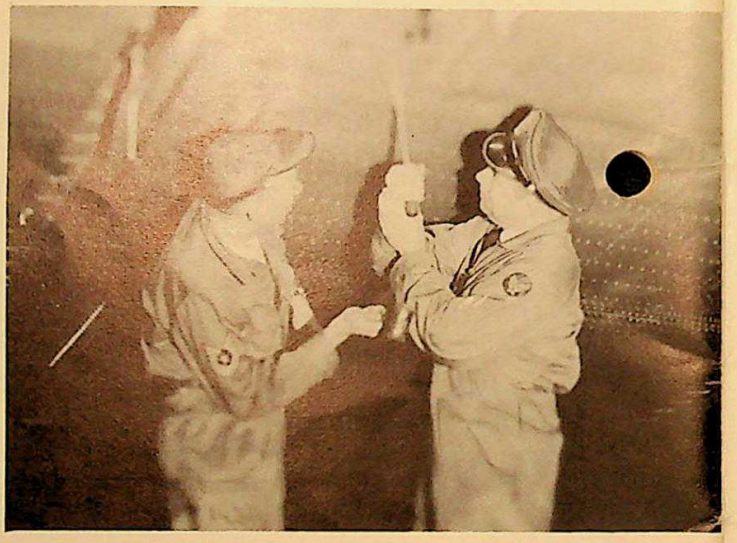
PICTURE YOURSELF as the pilot of this aircraft, the day before Thanksgiving, 240 miles from home. What would you have done?

The aircraft landed at 0800, was met by the alert crew, and parked within walking distance of base operations. The pilot requested immediate refueling so he could depart at 0915. During the visual inspection fuel was observed leaking from the right main tank. Maintenance was immediately requested from the transient alert personnel.

Four hours passed and still no sign of assistance, so the flight crew called refueling, had the tank defueled, put the fuel that could not be removed by the defueling truck into a 50-gallon drum and placed this drum under the nose of the aircraft. Then the pilot, a lieutenant colonel, and his crew (none of whom were qualified to do fuel cell repair) removed the stress plate and fuel cell.

You might ask, What is wrong with this? Following are a few irregularities noted during this operation.

1. The aircraft was not in the fuel cell repair area.
2. The area was not roped off as required by regulation.
3. A ramp sweeper was operating within 15 feet of the aircraft.
4. A 6x6 truck was backed up to the aircraft to off-load chutes.
5. Transient alert parked another C-47 next to this aircraft, wing clearance was less than 20 feet.



THE PILOT and the crew chief, with hammer and punch, removed the fuel cell when all their pleas for help were unanswered.

accident free

Travis	July '54	Davis-Monthan	June '57	Walker	Nov '57
Altus	July '54	Dyess	Aug '57	Castle	Dec '57
Dow	Mar '56	Offutt	Aug '57	Laughlin	Dec '57
Ramey	July '56	Whiteman	Sep '57	Barksdale	Jan '58
Mountain Home	Aug '56	Bunker Hill	Sep '57	Fairchild	Jan '58
Malmstrom	Oct '56	Loring	Oct '57	Lincoln	Jan '58
Ellsworth	Dec '56	Plattsburgh	Oct '57	Lake Charles	Jan '58
Carswell	June '57	Pease	Oct '57	Westover	Jan '58
Little Rock	June '57	Biggs	Nov '57	March	Jan '58
Lockbourne	June '57	Forbes	Nov '57	Schilling	Jan '58

During January 30 major Strategic Air Command stations in the ZI flew safely with neither a major nor a minor accident to mar their records. Dates refer to month and year in which current accident-free period began.

6. The crew removed the tank without grounding the aircraft.

7. There were no fire extinguishers near the aircraft.

8. Busses and cars going to and from base operations drove within 20 feet of the aircraft throughout the operation.

9. The only tools the crew had were those in a small tool box. Improvision with hammer and punch was necessary several times.

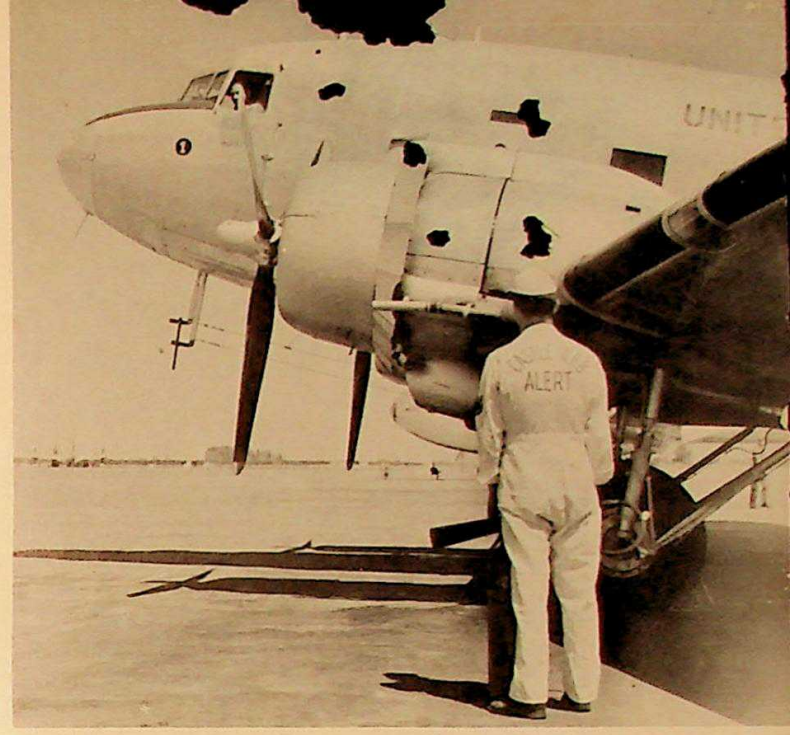
The pilot had pleaded with operations and transient alert for help. At 1600, still no action. He also tried but could not get anyone to remove the partly full 50-gallon drum from under the aircraft.

The reporter of this incident was a member of the inspection team that was making an annual inspection at the base. The pilot called the incident to his attention at approximately 1600. The inspector in turn called the acting base commander to come take a look at the situation. This was at 1605. The commander was not rated and did not feel he should take any action, so he in turn immediately called the maintenance officer who reported to the aircraft at 1655. The flight crew continued with the installation of the fuel tank they had procured from base supply. The acting base commander, and maintenance officer and his two assistants departed with the remark, "Tomorrow is a holiday. We will have to look into this first thing *Friday morning*."

The flight crew who had been up since 0400 that morning completed the tank installation and took off for its home base at 2215. After a day of fatiguing labor and total frustration, it is doubted very much that they would have been in any condition to cope with an emergency had one occurred. (That is, another one—beyond the one where they had already tried to blow themselves up on the ramp!)

Needless to say, this incident is a part of the IG report.

The base referred to above is not the only one guilty of inadequate support to transient crews.



COMMANDERS are urged to provide transient facilities to the same extent they support their own aircraft.

SAC has received several complaints from other commands, in recent months, that reciprocating aircraft have been serviced with JP4 fuel. Some of these were air-evac flights carrying patients. One aircraft was serviced with *water* from a truck marked *JP4* by a driver who stated it was *avgas*. A recent report indicates that at a well-established European base a SAC flight engineer and radio operator had to change two fuel selector valves, outside in the cold, using flashlights for lighting. Even after repeated requests for assistance, the base furnished only a supply chaser.

Safety in SAC is many things, and the base that doesn't support transients is authorizing an accident. In the interests of mutual support, base commanders are urged to provide transient facilities to the same extent he supports his own aircraft.

accident rate

THE ACCIDENT RATE for January starts off the new year with four accidents per 100,000 flying hours compared with seven for January 1957. This chart has been expanded to give a more comprehensive comparison of SAC subordinate commands. *Hq. includes Offutt AFB, Cooke AFB, 3908th SSG, and 1st RBS Group.

ing Safety Tips...

By COL. R. W. STANLEY
Chief, Safety Division

ent Navigation Signals

e the past few years most of us have be- e so accustomed to the static-free operation of VHF equipment we are inclined to overlook or even forget the effects of precipitation static on L/MF radio navigation equipment. Static has an adverse effect on the operation of the equipment and it could affect the safety of the flight.

Today we so seldom listen to HF or LF radio that we often do not realize we are encountering precipitation static until the windshield begins to "corona." Failure to maintain an awareness of these effects can be serious. Consider the following:

You are flying "on top" and, in preparation for an instrument letdown, you tune your ADF receivers to the appropriate LF navigational aids. You identify these aids aurally and are perfectly satisfied that your ADF equipment is pointing properly. All of this is in the clear and on top.

ILS Approach

With an appropriate clearance you begin a VOR or ILS approach. Within seconds you are down into the overcast and—without realizing it—beginning to encounter moderate to severe precipitation static. But you don't hear the static because you are listening to VHF equipment only. Perhaps it's daylight and you don't notice the windshield corona. Then suddenly your ADFs swing around, indicating passage over the facility to which they are tuned. The ADFs, however, could be displaying the "over" indication due to the effects of the precip static. If such were the case and your letdown was critical terrainwise, you could be in trouble!

Think about some of the instrument approaches you make and you will soon realize that dependence on ADF operation in conditions of precip static can be serious—particularly so if you aren't aware of the static and forget its operational effect on the equipment.

Fan Marker System

A similar situation also exists with respect to total dependence on 75 mc fan marker facilities. Characteristics of this system (ground facility and airborne equipment) are such that you have no way of determining in advance that the system is working properly.

Recently, while an aircraft was on approach, lightning struck the power lines supplying the compass locators and 75 mc markers of the ILS. Both locators immediately went off the air and the ADFs promptly turned around and pointed to other more distant stations operating on the same frequencies!

If you have dual VHF navigation receivers, use that equipment (by cross-checking against available VOR facilities) to positively verify passage over compass locators, "H" facilities and fan markers whenever recip static may be existent. Also, always check the identification of each navigation facility after it is selected. The VHF NAV frequency selector system, for example, has an excellent record, but it has been known to fail and come up with a receiver turned to a frequency other than that indicated on the selector.

(From Flight Safety Foundation)

T-33 Blown Canopy

The pilot of a T-33 landed and started his turn off the runway. He moved the canopy locking handle forward to unlock the canopy. It had moved about three inches when the canopy charge ignited and blew the canopy. A visual check of the cockpit showed that the jettison lever was down about 45 degrees and that the safety wire was broken.

Primary cause was maintenance error in that maintenance of the canopy jettison mechanism had not been properly accomplished. The detent which holds the canopy jettison handle in place was worn, permitting the handle to fall out of the slot.

Pilots are cautioned to visually check the position of the jettison handle on T-33s thus equipped before opening the canopy.

(From 5th Air Force Flight Safety News)

Nav-Aid Location Identifiers

Recently the CAA started a program involving the use of combination number-letter identifiers for navigational aids. These new location identifiers are to be used only for reporting points that are based on intersections and will consist of a single number digit plus two alphabetical letters. Each CAA region will have a specific number as its prefix.

The first of these identifiers noted is the Bays Point, California (BPT) reporting point. It's new identification is 4BP.

(From Flight Safety Foundation)

SAC Safety

Second Air Force

68th BW, Lake Charles Crew S-09: AC Maj Robert D Gregg, P 1/Lt [illegible] Bennett, Nav Capt Gordon D Smith

301st BW, Barksdale Crew L-53; AC Capt Walter V Coleman Jr, P 1/Lt [illegible] Kates, Nav Capt Paul E Bullers

306th BW, MacDill Crew L-65: AC Capt John J Logan, P 1/Lt Joseph L Maxwell, Nav 2/Lt Ronald E Hedges

379th BW, Homestead Crew S-30: AC Maj William E Statham, P Capt Robert L Hadley, Nav Maj William R. Forrey

4080th SRW, Laughlin Crew S-09A: P Maj Stewart V Spragins

Eighth Air Force

380th BW, Plattsburgh Crew T-48: AC 1/Lt Gene Hamman, P 1/Lt George E Kalmar, Nav 1/Lt Donald G Tolley, FE T/Sgt Vernon A Rees, RO S/Sgt Stewart H Narmer, BO S/Sgt William R Connors

55th SRW, Forbes Crew R-61: AC Capt Raymond P Britton, P Capt Douglas D Wells, Nav Capt Thomas R Dawes, 1st ECM Capt Donald R Ryan, 2d ECM 1/Lt Garry H Lee, 3rd ECM 1/Lt John J Pixley Jr

90th SRW, Forbes Crew R-62: AC Capt Earl J McGill, P 1/Lt Clarke Jones, Nav 1/Lt Joseph E Iwanoski

310th BW, Schilling Crew L-41: AC Capt Charles F Kuyk Jr., P 1/Lt Daniel D Stahl, Nav 1/Lt Robert J Circle

40th BW, Schilling Crew L-36: AC Capt David W Clark, P 1/Lt Roy J Notely Nav Capt Rodney P Collier

Fifteenth Air Force

509th BW, Walker Crew L-33; AC Capt William D Potter, P 1/Lt Fernie J Walker, Nav Maj Homer H Mohr

5th BW, Travis Crew L-44F: AC Maj Franklin G Rhoades, P Capt Freeman D Storm, RadNav Maj Charles P Andermann, Nav 1/Lt Kurt M Murck, CoNav Capt Earl L Johnson, 1st FE 1/Lt Robert A Page, 2d FE 1/Lt Thomas J Mulvey, 1st RO M/Sgt John M McCarl, 2d RO S/Sgt Billy J Daniels, G M/Sgt Albert G. Whipple, G T/Sgt Stephen N Garlock, G T/Sgt LeRoy E Haley

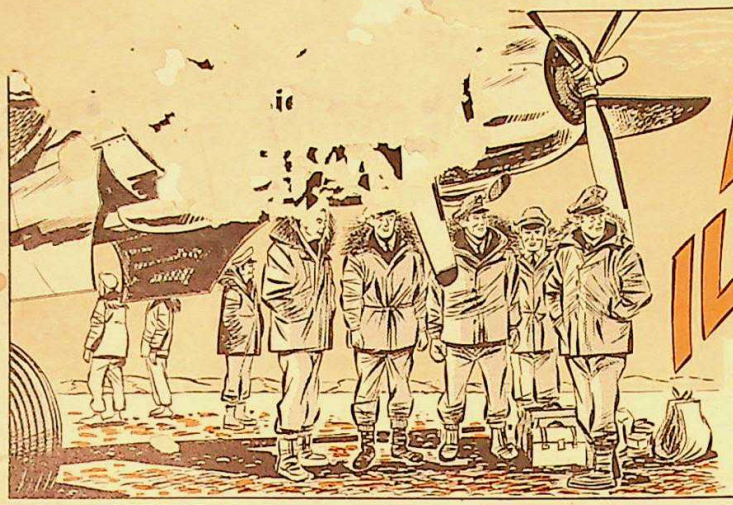
96th BW, Dyess Crew L-39: AC Maj John C Frazier Jr, P 1/Lt Edwin B Welch, Nav Maj Arthur A Schleicher

96th BW, Dyess Crew L-64: AC Maj Harold S Hensley Jr, P Capt Donald E Girton, Nav Capt Fred A Neff

22d BW, March Crew S-64: AC Lt Col Arnold Sipes, P 1/Lt Robert E. Stephenson, Nav Lt Col Robert L Kennedy

AN ILL WIND

"JAKE" SCHUFFERT 58

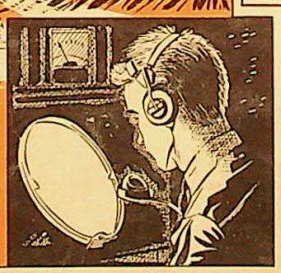


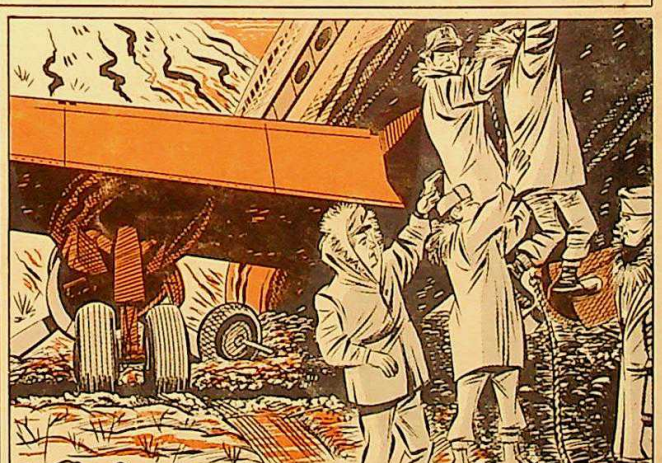
A C-54 CREW WAS PREPARED FOR A WINTER PASSENGER FERRY FLIGHT INTO SEVERAL NORTHERN BASES. BECAUSE OF SCHEDULING PROBLEMS AN AIRCRAFT WITHOUT SNOW TIRES WAS SET UP FOR THE TRIP. THE AC HAD NOT BEEN INTO SOME OF THE ENROUTE STATIONS, SO A CO-PILOT WAS SCHEDULED WHO HAD BEEN.

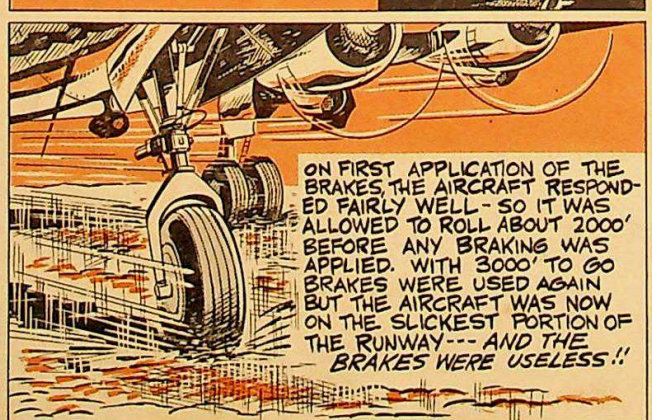
AFTER TWO STOPS OVER A FOUR DAY PERIOD THE NEXT LANDING WAS SCHEDULED FOR A KNOWN HAZARDOUS BASE WITH A SHORT RUNWAY AND OTHER WINTER PROBLEMS. ENROUTE AN ADVISORY WAS RECEIVED STATING THAT THE SURFACE WINDS HAD RISEN TO 15-25 KNOTS--*FROM A DIRECTION THAT WOULD DICTATE A DOWNWIND LANDING*--(LANDINGS RESTRICTED TO ONE DIRECTION AT THIS BASE) THE CREW CONTINUED--TO TAKE A LOOK.

OVER THE BASE THE TOWER ADVISED THAT THE RUNWAY BRAKING WAS POOR AND IN VIEW OF THE TAILWIND FOR LANDING, RECOMMENDED THEY PROCEED TO ALTERNATE. THERE WAS PLENTY OF FUEL ON BOARD. THE AC CONTINUED THE APPROACH -- THE CP WAS IN THE LEFT SEAT SINCE THE AC HAD NEVER BEEN INTO THIS FIELD.

GCA BROUGHT THE 54 ON THE ...AL. THE AIRCRAFT CROSSED ...E THRESHOLD SLIGHTLY BELOW ...LIDEPATH AT 107 MPH (TO USE ...ALL RUNWAY) IT TOUCHED DOWN ...T ABOUT THE 750' POINT----







ON FIRST APPLICATION OF THE BRAKES, THE AIRCRAFT RESPONDED FAIRLY WELL - SO IT WAS ALLOWED TO ROLL ABOUT 2000' BEFORE ANY BRAKING WAS APPLIED. WITH 3000' TO GO BRAKES WERE USED AGAIN BUT THE AIRCRAFT WAS NOW ON THE SLICKEST PORTION OF THE RUNWAY--- *AND THE BRAKES WERE USELESS!!*

REALIZING THE AIRCRAFT WOULD NOT STOP ON THE RUNWAY, THE AC GAVE A BLAST ON THE NR 4 THROTTLE TO STEER OFF THE LEFT SIDE AND AVOID THE STEEP SLOPE AT THE END. 250' OFF THE RUNWAY THE AIRCRAFT HIT A 4' DITCH AND SHEERED THE NOSEWHEEL. CREW AND PASSENGERS EVACUATED SUCCESSFULLY.

MANY FACTORS MADE THIS ACCIDENT, BUT THE ONE THAT MADE IT INEVITABLE WAS THE DECISION TO LAND WHEN FACED WITH SO MANY HAZARDS.

USAF PERIODICAL 62-6 AIR FORCE
Ralph Printing & Litho. Co., Omaha Nebr.